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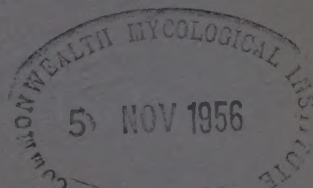
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THE VETERINARY BULLETIN

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[No. 11

DISEASES CAUSED BY BACTERIA AND FUNGI

GUSTAFSON, B. A. & SVEHAG, S. -E. (1956). Resistensprövning av stafylokokker, isolerade från hund. [**Antibiotic resistance of staphylococci isolated from dogs.**]—*Nord. VetMed.* **8**, 493-496. [In Swedish. English and German summaries. Abst. from English summary.] **3340**

Of 292 pathogenic strains of *Staph. albus* from dogs with otitis externa, tested for resistance to 6 antibiotics and to sulphanilamide, 7 were resistant to streptomycin and 11 to aureomycin and terramycin. Of 33 non-pathogenic strains from dogs, 6 were resistant to streptomycin and 12 to aureomycin and terramycin.

LAING, C. M. & MALCOLM, J. F. (1956). The incidence of bovine mastitis with special reference to the non-specific condition.—*Vet. Rec.* **68**, 447-455. [Abst. from authors' summary.] **3341**

In the west of Scotland the average incidence of mastitis in recent years is 37% of all cows. In about 60% of the cases specific pathogenic organisms are present in the milk, but in the remaining 40%, organisms are not demonstrable either in the milk or udder tissues. Of the specific infections, about 75% are now staphylococcal, a few are mixed staphylococcal and streptococcal, and the rest are chiefly streptococcal. The nature of non-specific mastitis is discussed.

OLIVER, J., DODD, F. H. & NEAVE, F. K. (1956). Infection and mastitis in a dairy herd 1945-53.—*J. Dairy Res.* **23**, 169-180. [Abst. from authors' summary.] **3342**

A description is given of a dairy herd, its breed composition, history and management over a period of 8 years. A close study of infection and mastitis was made, and the bacteriological methods used are described. There were 530 complete lactations for which full records were available [see next abst.].

OLIVER, J., DODD, F. H., NEAVE, F. K. & BAILEY, G. L. (1956). Variations in the incidence of udder infection and mastitis with stage in lactation, age and season of the year.—*J. Dairy Res.* **23**, 181-193. [Authors' summary modified.] **3343**

With advancing lactation there was a decline in the rate of first infection, re-infection, total new infection and in mastitis in infected cows and quarters. In early lactation there was a marked tendency for infected cows and quarters to develop clinical symptoms. During the last 4 months of lactation there was no significant rise either in infection or in mastitis. There was an increase in infection and mastitis with advancing age, but infected older cows were no more liable to develop clin. symptoms than younger cows. It appeared that the longer a quarter was free from infection the greater were its chances of remaining so.

No major seasonal trends were found in the incidence of udder infection and mastitis, although it was slightly higher in the summer months.

I. OLIVER, J., DODD, F. H., NEAVE, F. K. & LEE, J. M. (1956). Udder infections in the 'dry period'. II. The effect of withdrawing secretion from the dry udder on the incidence of infection.—*J. Dairy Res.* **23**, 194-196. **3344**

II. OLIVER, J., DODD, F. H. & NEAVE, F. K. (1956). Udder infections in the 'dry period'. IV. The relationship between the new infection rate in the early dry period and the daily milk yield at drying-off when lactation was ended by either intermittent or abrupt cessation of milking. V. The effect of teat disinfection at drying-off on the incidence of infections in the early dry period.—*Ibid.* 204-211 & 212-216. [Authors' summaries modified.] **3345**

I. After drying-off, samples of secretion were taken at weekly intervals from 2 quarters

of each of 75 cows; samples were withdrawn from the other 2 quarters in the fourth and fifth weeks of the dry period. No difference in rate of infection was found. Significantly fewer staphylococcus infections occurred in quarters sampled in the early dry period than in those sampled later. About half of the new infections persisted until the next lactation. It was concluded that if there is natural sealing of the teat orifice, it is of minor importance in preventing infection in the early dry period.

II. The records of a herd were studied in which the milk yield was relatively high at the time of drying-off. Cows giving 7 lb. of milk or less daily were dried off by intermittent milking, and those giving over 7 lb. daily were dried off by 'stop' milking. The data from 113 dry periods were analysed. The rate of new infection in the dry period increased with the yield at drying-off. This was not due to age differences between the groups. The rise in infection rate was due mainly to *Str. agalactiae*. The yield in the following lactation was related to the yield at drying-off. New infections were more numerous in cows that had been milked by hand than in those milked by machine.

The effect of disinfecting the skin of the teats at drying-off on the incidence of new infection in the early dry period was studied. After the last milking of lactation the udders of alternate cows to go dry were washed with sodium hypochlorite solution (880 p.p.m.), dried, and each teat immersed in a 5% iodine tincture for 20 sec., and then again immersed 24 hours later. There was less new infection in cows that had teats disinfected than in control cows. The difference was highly significant for cows that were not infected on drying off. The treatment effect was due to a highly significant reduction in the incidence of infection by *Staph. aureus*. New infection caused by *Str. uberis* was not affected.

BLACKBURN, P. S. (1956). Antibiotic treatment of mastitis and its effect on the cell content of the milk.—*J. Dairy Res.* 23, 225-228. [Author's summary modified.] 3346

Penicillin, dihydrostreptomycin, or a combination of the two eliminated organisms from 61% of staphylococcal and from 80% of streptococcal udder infections. In 84% of the successfully treated quarters the cell counts of the milk were reduced, about half of them to a normal and about one third to a late lactation type of cell count in which the majority of cells are epithelial cells. The remainder became re-infected before there was time for the cell counts to return to normal, which may take as long as

5 weeks. In quarters in which the cell count eventually became normal the percentage of polymorphs in the milk fell to below 30% one week after treatment.

RYABOVA, G. S. (1956). [Disinfection in strangles.]—*Veterinariya, Moscow*. 33, No. 6. pp. 68-72. [In Russian.] 3347

The following were used for the disinfection of stables infected with *Streptococcus equi*:—hot 5% aqueous soln. of creolin (containing 15% phenol); hot 5% soln. sodium hydroxide; 2% formaldehyde soln.; clear soln. of bleaching powder containing 4% active chlorine; 20% suspension of freshly-slaked lime (applied twice at an interval of an hour). These preparations were applied at the rate of 1 litre for every square metre. After disinfection the building was sealed for 3 hours and then ventilated; mangers were carefully washed out with water. —R.M.

MEYN, A. (1956). Die Fortschritte der Rindertuberkulosebekämpfung in der Bundesrepublik (Stand am 1.7.1955). [Progress in the control of bovine TB. in the German Federal Republic. The position in July 1955.]—*Rindertuberkulose*. 5, 69-78. 3348

Between July 1954 and July 1955, 171,516 new herds, containing 1,414,916 cattle, were declared to be free from TB. There are now 513,890 attested herds in Western Germany, 36% of the total.—M.G.G.

SALVIOLI, G. & SALVIOLI, G. P. (1956). Primo impiego del V.D.S. test nel bovino. [Use of a preparation of killed tubercle bacilli with hyaluronidase for the diagnosis of bovine TB.]—*Zooprofilassi*. 11, 211-219. 3349

A killed TB. vaccine containing hyaluronidase, referred to as "V.D.S.", was injected i/d into cattle in doses of 0.25-0.5 ml. The reaction was read after 48 or 72 hours. There was no information on the specificity of the test, and no comparison with tuberculin.—R.M.

KOCH, E. (1955). Untersuchungen über den Einfluss der intrakutanen Tuberkulinprobe auf den Ausfall der Komplementbindungsreaktion bei tuberkulösen Rindern. [The effect of the tuberculin test on the result of the complement-fixation reaction in tuberculous cattle.] — *Inaug. Diss., Munich*. pp. 33. 3350

Before the i/d tuberculin test was performed, the sera of 3 out of 40 tuberculous cattle were positive to the complement-fixation test. Two weeks after the tuberculin test, 7 of them were positive to the c.f. test. K. concluded

that the latter was of no value for the diagnosis of cases which gave a doubtful reaction to tuberculin, as has been suggested by Beller [*V.B.* 25, 1860]. Most of the cows with positive c.f. tests had clinical signs of TB.—R.M.

I. GOVOROV, A. M. (1954). [**Vaccination of cattle against TB. Part III.**]—*Nauch. Trud. ukrain. Inst. exp. Vet.* 21, 82-90. [In Russian.] 3351

II. GOVOROV, A. M. (1955). [**Vaccination of cattle against TB. Part IV.**]—*Ibid.* 22, 93-102. [In Russian.] 3352

I. Young cattle were vaccinated with B.C.G. on farms where TB. was of long standing and difficult to eradicate. The double intradermal tuberculin test, using bovine and B.C.G. tuberculins, served to distinguish vaccinal from infection reactions. 27% of calves reacted to tuberculin for up to 20 months after immunization. Best protection was obtained by giving 2 i/d inoculations, a month apart; 4 mg. dried B.C.G. was used for each inj.

II. Ten calves, given i/d inoculations of B.C.G. 14½ months previously, were placed in contact with tuberculous cattle for 5½ months. One developed TB., 13½ months after the period of exposure.—R.M.

GOERTTLER, V. (1956). Zur Frage der Tuberkuloseinfektion von Rindern durch Menschen. [**TB. in cattle from man.**]—*Berl. Münch. tierärztl. Wschr.* 69, 185-187. [English summary.] 3353

A general article on tuberculous cross-infection between human beings, animals and birds. No new knowledge.—I. W. JENNINGS.

VAN ZWANENBERG, D. F., STEWART, C. J., HARDING, K. M. & GRAY, S. T. G. (1956). **Sources of tuberculous infection in an area containing bovine tuberculosis.**—*Brit. med. J.* June 23rd. 1464-1466. [Authors' summary modified.] 3354

A dairy farm was the source of an outbreak of bovine type TB. in a small town. A tuberculin survey of children revealed that most of the younger ones had acquired their infection from milk. Although the town has a higher percentage of positive reactors and relatively more non-pulmonary TB. than Ipswich, where the milk is pasteurized, it appears to have far less pulmonary TB. The present precautions against bovine TB. are considered inadequate.

LACK, C. H. (1956). **The pathogenesis of tuberculosis as shown in studies of omental**

spreads.—*Amer. Rev. Tuberc.* 73, 362-377. [French and Spanish summaries. Author's summary modified.] 3355

The changes in the omentum of g. pigs and rabbits were described following i/p inoculation of *M. tuberculosis*, H37Rv, H37Ra, B.C.G. *M. smegmatis*, *M. phlei*, and an unspecified mycobacterial strain obtained from tap-water. Attention was drawn to the immediate agglutination of monocytes and neutrophils which have phagocytosed bacilli and to the enhancement of this phenomenon in re-infected animals. It is suggested that the survival of bacilli and the persistence of lesions may correspond, among other factors, to their ability to multiply *in vitro* in an environment deficient in oxygen. An invasion by lymphocytes is apparent at the time hypersensitivity occurs in primary infections and in about two days after secondary infection. It is suggested that the cell density of tubercles may restrict bacillary multiplication and that subsequent necrosis is brought about by a combination of antigen released from bacilli with antibody carried by lymphocytes.

FREMMING, B. D., BENSON, R. E., YOUNG, R. J., NYE, R. E. & SMITH, W. E. (1956). **Maintenance of a colony of tuberculous monkeys.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 219-222. [Abst. from authors' summary.] 3356

During 18 months' treatment of a colony of 45 tuberculous monkeys, one death was attributed to TB. (91 days following initiation of therapy). P.M. examination of 4 which had died from coal gas poisoning and which were negative reactors to the tuberculin test revealed no evidence of TB. As these monkeys had undergone treatment for 7 months, spread of TB. within the colony appears to be at a minimum. All the monkeys have exhibited a normal growth curve and marked clinical improvement. There has been no cross infection from the tuberculous colony to the main monkey colony as determined by i/d (palpebral) tuberculin testing and P.M. examination.

SHCHEPILOV, N. S. (1956). [**Infectivity of tubercle bacilli in eggs from ducks which reacted positively to the tuberculin test.**]—*Veterinariya, Moscow.* 33, No. 5. pp. 48-49. [In Russian.] 3357

Viable tubercle bacilli, pathogenic for rabbits, were isolated from 7 out of 18 eggs from ducks which reacted to the i/d tuberculin test. On the farm studied. 30 out of 219 ducks were reactors. [See also *V.B.* 24, 3735.]—R.M.

LANE, J. J., JR., CLARKE, E. R., JR. & HOLMES, T. H. (1956). **The relationship of tuberculin sensitivity and adrenocortical function in humans.** — *Amer. Rev. Tuberc.* **73**, 795-804. [French and Spanish summaries. Abst. from authors' summary.] **3358**

The relationship of tuberculin sensitivity and 17-ketosteroid excretion was studied in 34 men and 14 women, all positive reactors, who were subjected to quantitative tuberculin testing with various strengths of P.P.D. It was concluded that endogenous adrenal hormones may influence the phenomenon of hypersensitivity in TB. and that adrenocortical hyperfunction tends to be associated with a negative skin reaction.

ALBERICCI, J. P. & FLETCHER, J. A. (1956). **A modified method for preparing and counting viable suspensions of tubercle bacilli.**—*J. gen. Microbiol.* **14**, 692-697. [Authors' summary modified.] **3359**

A modification of the technique of Fenner, Martin & Pierce (1949) is described for the preparation of homogeneous suspensions of single organisms of a strain of *Mycobacterium tuberculosis* at concentrations of about 10^8 single organisms per ml. A technique is also described for the accurate assessment of counts of viable organisms.

DOSCH, F. (1956). Die mykobakteriellen Infekte des Hühnerembryo unter besonderer Berücksichtigung der Resultate nach intravasaler Infektion. [**Infection of the chick embryo with mycobacteria, especially by the intravascular route.**] — *Zbl. Bakt. I (Orig.)* **165**, 391-423. [English, French and Russian summaries.] **3360**

An improved method of injecting chick embryos by the intravascular route is described. D. suggested that infection of embryonated eggs with mycobacteria by this method can be used for virulence tests for B.C.G. vaccines. Results are obtained within 6 days. The test was also of value for the detection of mixed infections with human type tubercle bacilli, as well as other mixed infections.—F. K. LEEB.

HOLE, N. H. (1956). **Johne's disease. The theory behind herd complement-fixation testing and its proper usage in the field experiment in progress.**—*Brit. vet. J.* **112**, 272-278. [Author's summary modified.] **3361**

The principles of eradicating Johne's disease on the basis of the c.f. test are discussed, together with the difficulties involved. The experimental nature of the procedure and its purpose of eliminating animals before they can

disseminate infection should be made clear to the owner. The occurrence of additional reactors in later tests suggests a heavy initial infection with a number of animals in a non-reacting stage when testing began. It is only when calves born after the experiment has started are found to be infected that an attempt at eradication is a failure.

GORET, P., JOUBERT, L. & MARCON, C. (1956). Recherches sur le diagnostic et le traitement (sulfones et I. N. H.) de la maladie de Johne des bovidés. [**Diagnosis of Johne's disease and treatment with sulphone and isoniazid.**] — *Bull. Acad. vét. Fr.* **29**, 89-96. **3362**

The most reliable microscopic method of diagnosis was stated to be the modification of Ziehl staining described by Desbordes *et al.* Treatment of 8 cattle with Johne's disease by oral administration of isoniazid (4 g. daily for 6 days) failed. Eleven others were given 4:4-diaminodiphenylsulphone in doses of 10-15 g. by mouth daily for 10 days, or 1-3 g. by i/m inj. daily for 15 days. Eight clinical cures were claimed; one animal died and the remaining 2 relapsed after slight improvement.—R.M.

ANGER, D. (1956). Essai de traitement de la paratuberculose par le rimifon. [**Treatment of Johne's disease with isoniazid.**]—*Rec. Méd. vét.* **132**, 306-307. **3363**

Clinical cure was claimed for 10 of 21 cattle with Johne's disease, following the oral administration of 1.75 g. isoniazid twice daily for 10 days. One animal was given a second course of treatment 3 weeks after the first.—R.M.

HIRCH, A. (1956). **Infection of hamsters and rabbits with *Mycobacterium johnei*.** — *J. comp. Path.* **66**, 260-269. [Author's conclusions modified.] **3364**

Hamsters, particularly those inoculated when only a few days old, appeared to be more susceptible to *M. johnei* than rabbits. Typical acid-fast rods were detected in smears from the small intestine of hamsters after about 25 weeks of infection. No clinical disease developed in animals kept up to 40 weeks after inoculation. There was evidence that the infectivity of the strains differed; strains recently isolated from goats appeared to be able to establish themselves more readily than those passaged through rabbits and hamsters.

NIGG, C., RUCH, J., SCOTT, E. & NOBLE, K. (1956). **Enhancement of virulence of *Mallomyces pseudomallei*.** — *J. Bact.* **71**, 530-541. [Abst. from authors' summary.] **3365**

The virulence of *Pfeifferella whitmori* (M.

pseudomallei) for mice was enhanced by serial passage to the point where 10 to 100 organisms would produce a rapid, fatal infection when given intracerebrally, intraperitoneally or as an aerosol.

ROWSSELL, H. C. (1956). **Studies on the experimental production of swine erysipelas.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 143-148. [Author's summary modified.] **3366**

The three routes of inoculation studied were skin scarification and oral and intravenous administration. Oral administration of virulent *E. rhusiopathiae* produced symptoms of natural infection. The tonsillar carrier was discussed. The value of the blood culture and agglutination tests was shown.

I. TOLSTYAK, I. E. (1954). [Experimental infection of pigs with swine erysipelas by means of *Stomoxys calcitrans*.] — *Nauch. Trud. ukrain. Inst. exp. Vet.* 21, 128-141. [In Russian.] **3367**

II. TOLSTYAK, I. E. (1956). [Transmission of swine erysipelas by *Stomoxys calcitrans*.] — *Veterinariya, Moscow.* 33, No. 6. pp. 73-75. [In Russian.] **3368**

I. & II. T. reported experiments which confirmed the findings of Wellmann [V.B. 21, 3472-3] that swine erysipelas can be transmitted by *S. calcitrans*.—R.M.

GRAY, M. L., LASSITER, C. A., WEBSTER, H. D., HUFFMAN, C. F. & THORP, F., JR. (1956). **The isolation of *Listeria monocytogenes* from the liver of calves and a discussion of intrauterine infection.**—*Vet. Med.* 51, 316-318 & 335-336. [Authors' summary modified.] **3369**

Erysipelothrix (Listeria) monocytogenes was isolated from the livers of 6 calves less than 19 days old. The main symptoms were general weakness and loss of weight. The most consistent lesions were hepatic necrosis and gastroenteritis. The role of *E. monocytogenes* in abortion and early death of the young may be more important than previously suspected.

YOUNG, S. (1956). **"Circling disease" in sheep in Shetland due to *Listeria monocytogenes*.**—*Vet. Rec.* 68, 459-461. [Author's summary modified.] **3370**

The clinical history of an outbreak of encephalitis in sheep in Shetland was described. The condition was identical with "circling disease" and *Erysipelothrix (Listeria) monocytogenes* was recovered from the brain of one sheep. The source of infection was not discovered.

OSEBOLD, J. W. & SAWYER, M. T. (1956). **Listeriosis—factors in immunity and pathogenesis.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 189-195. [Authors' summary modified.] **3371**

Seventeen sheep were immunized against *Erysipelothrix (Listeria) monocytogenes* by subcutaneous inoculation of virulent live culture. The immunized animals and 7 control sheep were challenged by the intracarotid inoculation of 50 million organisms per kg. body wt. All the controls, but none of the immunized animals, developed fatal *Listeria* encephalitis. This unusual demonstration of acquired immunity is discussed in relation to the pathogenesis of listeriosis.

LEKVEISHVILI, N. S. (1955). [Specific prophylaxis of *Pasteurella* infection in cattle and buffaloes.] — *Trud. gruzin. nauchno-issled. vet. Inst.* 11, 63-71. [In Russian.] **3372**

Some 18,000 cattle and buffaloes were inoculated with a *Past. septica* saponin vaccine during 1947-51. Two inoculations were given at intervals of either 12-15 days or 1½-2 months. Ten inoculated cattle died from haemorrhagic septicaemia as compared with 187 of 22,000 uninoculated animals on the same farms. Immunity lasted for at least 6 months.—R.M.

KIRCHNER, C. & EISENSTARK, A. (1956). **Lyso-geny in *Pasteurella multocida*.**—*Amer. J. vet. Res.* 17, 547-548. [Authors' summary modified.] **3373**

Eleven out of 25 strains of *Past. septica* isolated from fowl cholera were lysogenic. Phages comprised five distinct groups as to their host range and three distinct groups on the basis of plaque morphology.

SQUIBB, R. L., GUZMAN, M. A. & SCRIMSHAW, N. S. (1955). **Relación de las altas temperaturas ambientales, el hambre y la coriza con respecto a los niveles de varios constituyentes sanguíneos en polluelos de la raza New Hampshire. [Effect of high environmental temperatures, fasting and coryza on various blood constituents in chicks.]**—*Bol. Ofic. sanit. pan-amer. Suppl.* No. 2. p. 193. **3374**

A high temp. caused an increase in the water intake and a decrease in food consumption, but no significant changes in the blood constituents. In starvation blood constituents did not reach "critical levels" though death

ensued. After 10 days there was an increase in riboflavin and a decrease in ascorbic acid and total carotenoids—these variations were statistically significant. Significantly lower levels of vitamin A and ascorbic acid, without alteration of the protein or carotenoid levels, were observed in adult hens with natural coryza. It is considered possible that the carotenoid level remained unaltered because there was interference with the conversion of carotenoids to vitamin A. Riboflavin levels were higher in infected birds.—T.E.G.R.

I. HINZE, P. M. (1956). *Klebsiella mastitis in dairy cows.*—*Vet. Med.* 51, 257-259. 3375

II. CREWS, F. W. (1956). *Pure culture properties of Klebsiella organisms derived from cases of bovine mastitis.*—*Ibid.* 259-261 & 296. 3376

I. An outbreak of acute mastitis, due to a variant strain of *Klebsiella pneumoniae*, in a herd of Holsteins is recorded. Intramammary injections of 500 mg. neomycin sulphate ointment or of terramycin ointment, containing polymyxin B sulphate, gave good results, but neither drug was 100% effective. Recent information suggests that *K. pneumoniae* is an important cause of bovine mastitis, and should be considered as a possible aetiological agent in all cases caused by a Gram-negative, capsulated organism not readily identifiable by the usual cultural and biochemical procedures.

II. The cultural and biochemical properties of specimens from typical cases of mastitis were tested for bacterial identification. Pure culture and biochemical properties established all cultures as a species of *Klebsiella*. The organisms were characterized by non-motility, capsule formation and failure to liquefy gelatin. Other distinctive features included negative indol test, methyl red, Voges-Proskauer, hydrogen sulphide, and positive citrate, urea, and nitrate tests. The cultures from the mastitis cases are believed to be a variant of *K. pneumoniae*.—F. K. LEEB.

STRAUCH, D. & MÜNKER, W. (1956). Bakteriologische Wasseruntersuchungen in einem oberhessischen Fluss im Zusammenhang mit in diesem Flusstal aufgetretenen Salmonellen-Infektionen bei Haustieren. [Bacteriological examination of river water in connexion with salmonellosis in domestic animals in Hesse.]—*Berl. Münch. tierärztl. Wschr.* 69, 205-208. [English summary.] 3377

Following repeated outbreaks in the Wetter River valley, the bacterial content of the

river water was investigated. Gross bacterial contamination was found and 5 strains of *Salmonella* were isolated, namely *S. java* (twice), *S. manhattan*, *S. schottmuelleri* and *S. braenderup*.—I. W. JENNINGS.

ROEMMELE, O. & WESTPHAL, W. (1956).

Dauerausscheider und frische Blutinfektion bei der Enteritis-Bekämpfung des Rindes. [Carriers, and recently infected cattle with bacteraemia, as problems in the control of salmonella infection.]—*Dtsch. tierärztl. Wschr.* 63, 237-240. 3378

Attention is drawn to the inadequacy of the present law in Germany regarding the detection of *Salmonella* carriers among cattle. No provision has been made in herd testing for the distinction between recently infected animals and those which eventually become carriers. Serological as well as bacteriological blood tests should be carried out, and 10 weeks should elapse after demonstration of salmonella in the blood, before bacteriological testing of the faeces, which should be repeated several times at intervals of 15 days. In the authors' experience at least 3 months are required for the final detection of all carriers in a herd.—F. K. LEEB.

VAN ROEKEL, H. (1956). Progress in pullorum disease eradication.—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955, 339-343. 3379

There has been notable progress in the control of *S. pullorum* infection of fowls in the U.S.A. during the past ten years. In 39 out of 47 states less than 0.5% of birds reacted to the agglutination test during 1955. Plans for complete eradication were discussed.—R.M.

ROSS, R. T., HOLTMAN, D. F. & GILFILLAN, R. F. (1956). Alterations in the nitrogen excretion pattern of chicks infected with *Salmonella pullorum*.—*J. Bact.* 71, 521-524. [Abst. from authors' summary.] 3380

In *S. pullorum* infected chicks there is a 7 to 10-fold increase in blood urea. It is presumably of arginolytic origin and formed via the ornithinecitrulline cycle. Arginase activity, which is present in minute quantities or absent in normal chicks, increases within 24 hours after infection. The protective action of arginine previously reported is attributed to its role in the synthesis of urea which is inhibitory to the growth of *S. pullorum*.

BLAXLAND, J. D., SOJKA, W. J. & SMITHER, A. M. (1956). A study of *Salm. pullorum* and *Salm. gallinarum* strains isolated from field outbreaks of disease.—*J. comp. Path.*

66, 270-277. [Authors' conclusions modified.] **3381**

An account is given of the study of 1,007 cultures of *S. pullorum* and 618 of *S. gallinarum* isolated from fowls. The results, together with the work of earlier investigators, provide conclusive evidence that *S. pullorum* and *S. gallinarum* are two distinct species. Their differentiation is based on growth characteristics and biochemical reactions, particularly the fermentation of maltose and dulcitol, and on the absence of variation in antigenic form in cultures of *S. gallinarum*. It is considered that these differences must be related to the distinctive epidemiology of acute outbreaks of pullorum disease and fowl typhoid.

SMITH, H. WILLIAMS. (1956). **The susceptibility of different breeds of chickens to experimental *Salmonella gallinarum* infection.**—*Poult. Sci.* **35**, 701-705. [Abst. from author's conclusions.] **3382**

There was considerable variation between breeds and cross-breeds of fowls in susceptibility to *S. gallinarum* infection. Variation was sometimes noted between birds of different origin but of the same breed. As a rule, the heavy breeds were more susceptible than the light breeds.

WILLIAMS, J. E. & HARRIS, M. E. (1956). **Antigenic studies using ammonium sulfate. IV. The sedimentation effect of ammonium sulfate on *Salmonella gallinarum*.**—*Amer. J. vet. Res.* **17**, 535-537. [Authors' summary slightly modified.] **3383**

Suspensions of 41 strains of *S. gallinarum* and 23 strains of standard type *S. pullorum* were exposed to varying concentrations of ammonium sulphate, incubated for a short time and then centrifuged. It was found that a concentration of 265 g./l. completely cleared the supernatant fluids of most *S. gallinarum* suspensions but had considerably less effect on the turbidity of suspensions of standard type cultures of *S. pullorum*. These observations suggest minor antigenic differences between *S. gallinarum* and standard strains of *S. pullorum* not demonstrable by conventional serological methods.

WILLIAMS, J. E. & MACDONALD, A. D. (1956). **The past, present, and future of salmonella antigens for poultry.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 333-339. **3384**

Serological methods for the diagnosis and control of *S. pullorum* infection and fowl typhoid are reviewed; they are at present also

being used for the detection of carriers of *S. typhi-murium* among turkeys. It is considered that as a result of the decrease in the incidence of pullorum disease it will be possible to devote more attention to the diagnosis and control of other salmonella infections.—T.E.G.R.

HARVEY, R. W. S. (1956). **Choice of a selective medium for the routine isolation of members of the *Salmonella* group.**—*Mon. Bull. Minist. Hlth Lab. Serv.* **15**, 118-124. [Author's summary modified.] **3385**

A simple brilliant green MacConkey medium is contrasted, with regard to its capacity to isolate salmonella, with deoxycholate citrate agar and Tabet's modification of Wilson and Blair's medium. The highly satisfactory performance of the former is noted irrespective of the type of salmonella present, with the exception of *S. typhi*. The results are independent of the type of material examined, the medium being equally satisfactory for the examination of faeces or sewage. The success of this medium is thought to lie partly in its selectivity and partly in the constancy of its behaviour, in contrast to the high batch variability of the more modern media.

SYKES, J. A. (1956). **Color development in tetrazolium-stained *Brucella abortus* antigens.**—*Amer. J. Hyg.* **63**, 288-293. [Author's summary modified.] **3386**

It is possible to produce adequately stained suspensions of *Br. abortus* for use in the ring test with either neo-tetrazolium chloride or blue tetrazolium. The method is quicker and much simpler than methods in which haematoxylin is used. Tetrazolium-stained antigens retain their full colour even at low pH values. The method gives easily reproducible results, and colour variation from batch to batch is minimal. The chief factors governing the production of an adequately stained antigen by means of the tetrazolium salts mentioned are: concentration of tetrazolium (10 mg.%), period of incubation (5 hours), conc. of cells (0.2%) and pH of suspending medium (pH 9.5).

- I. CALDAS, A. D., MACHADO, L. P. & PLANET, N. (1955). O teste de fixação em superfície, de Castañeda, para o diagnóstico da brucelose. Observações sobre sua execução e leitura. [The surface fixation method for the diagnosis of brucellosis. Observations concerning technique and the reading of results.] — *Arch. Inst. biol. (Def. agric. anim.)*, S. Paulo. **22**, 87-92. [English summary.] **3387**
- II. CALDAS, A. D. & MACHADO, L. J. P.

(1955). Emprêgo da prova da fixação em superfície de Castañeda no diagnóstico da brucelose suína. [**Surface fixation method for the diagnosis of porcine brucellosis.**] — *Ibid.* 243-247. [English summary.] **3388**

I. Surface fixation tests were carried out with suspect sera from human beings, cattle and pigs and with milk from infected and non-infected cows. The technique laid down by Castañeda [*V.B.* 24, 3753] was followed, with certain modifications. The technique and interpretation of the test are discussed.

II. In a comparison of the tube agglutination and the surface fixation tests the intensity of reaction in the latter varied directly with the agglutinin titre and occurred in sera with titres of 1:160 or over. Surface fixation was also observed with 15 of 292 sera which had given a negative agglutination reaction. This discrepancy is attributed to the blocking-phenomenon in the agglutination test.—T.E.G.R.

CAMERON, H. S., KENDRICK, J. W. & MERRIMAN, R. W. (1956). **A whey-plate test for the diagnosis of bovine brucellosis.**—*J. Amer. vet. med. Ass.* 129, 19-22. [Authors' summary and conclusions modified.] **3389**

A plate test with whey similar to the blood test for bovine brucellosis is described. Both tests were carried out on 5,062 cows. There was 96% agreement, but the whey test appeared to be more efficient. It was concluded that the whey test could be substituted for the blood test in the detection of brucellosis in lactating cows.

CEDRO, V. C. F., CISALE, H. O. & CACCHIONE, R. A. (1955). Investigación rápida de la brucelosis en los mataderos mediante la prueba con antígeno para sangre total. [**A whole blood test for diagnosis of brucellosis in the abattoir.**]—*Rev. Med. vet., B. Aires.* 37, 121-124. [English and French summaries.] **3390**

A rapid plate test with whole blood was described for the diagnosis of brucellosis. Results obtained were corroborated by the serum agglutination test.—M.G.G.

WELLS, K. F. (1956). **New interpretation of the agglutination test in officially calf-vaccinated cattle.**—*Canad. J. comp. Med.* 20, 269-270. **3391**

Two tables provide the interpretation of reactions in cattle officially vaccinated against brucellosis during calfhood and in non-vaccinated cattle for official classification of (a) negative, (b) questionable and (c) positive, in

brucellosis testing. This is an official ruling by the Health of Animals Division, Canada Department of Agriculture.—R. V. L. WALKER.

I. ZHOVANIK, P. N., MAÏBORODA, A. A., BRENNER, L. Y. & PARKHOMENKO, E. I. (1954). [**Results of trials with U.I.E.V. brucella vaccine in cattle. Part I.**]—*Nauch. Trud. ukrain. Inst. exp. Vet.* 21, 58-81. [In Russian.] **3392**

II. MAÏBORODA, A. A., ZHOVANIK, P. N., ZADARA, V. I., SERDYUK, S. I. & PARKHOMENKO, E. I. (1955). [**Results of trials with U.I.E.V. brucella vaccine in cattle. Part II.**]—*Ibid.* 22, 123-138. [In Russian.] **3393**

I & II. The vaccine prepared at the Ukrainian Institute for Experimental Veterinary Science (U.I.E.V.) is a dense suspension of agar cultures of virulent *Br. abortus*, inactivated with potash alum and crystal violet. Satisfactory lab. trials have been reported by Zhovanik (1951). Field trials were carried out on 10 infected farms during 1950-53: over 5,000 cattle were vaccinated. Two i/m injections, each of 5 or 10 ml., were given at an interval of 15-20 days. Cattle were revaccinated after 12 months and, if necessary, annually thereafter. A systemic reaction developed on the day after inoculation and lasted for 2-5 days. In cows it caused a temporary drop in milk yield. Blood serum taken at intervals from 3 weeks to 2 years after vaccination protected mice from infection with 2-3 LD₅₀ of brucella. Vaccination protected 91-99% of cattle from infection by contact.—R.M.

BÜRKI, F. (1956). Serologische Erhebungen an einer Brucella-infizierten Schafherde. [**Serological observations on a flock of sheep infected with brucella.**]—*Schweiz. Arch. Tierheilk.* 98, 231-240. [English, French and Italian summaries.] **3394**

Serological tests, by various methods, on a total of 146 sera from sheep infected with brucella confirmed that the agglutination test is only of limited value in diagnosis; agglutination in hypertonic saline medium is superior to that in physiological saline medium. Where the agglutination reaction was only weakly positive or negative, humoral antibodies were demonstrable by the indirect Coombs test and the complement-fixation test. B. recommended the additional use of the Coombs test and/or the c.f. test in cases where results with the agglutination test are doubtful.—F. K. LEEB.

RENOUX, G. & ALTON, G. G. (1955). Etudes sur la brucellose ovine et caprine. III. Sus-

ceptibilité des chevreaux à l'infection par *Br. melitensis*. [Susceptibility of young goats to *Brucella melitensis*.] — *Arch. Inst. Pasteur Tunis.* **32**, 225-235. **3395**

Br. melitensis was isolated from the tissues and organs of kids born to artificially infected dams; infection is assumed to have occurred *in utero*. Kids born before maternal infection and left in contact with the dams and other infected goats contracted infection, possibly through ingestion of infected milk or contact with infected material, e.g. urine, faeces, vaginal discharges. Specific agglutinins were not found in the blood of infected kids.—T.E.G.R.

PEGREFFI, G. (1956). Ulteriori ricerche sull'azione vaccinante di *Br. melitensis* devitalizzate mediante antibiotici nelle cavie. [Immunization of g. pigs with *Br. melitensis* inactivated by antibiotic.] — *Vet. ital.* **7**, 391-403. [English and French summaries.] **3396**

A suspension of *Br. melitensis* was inactivated by aureomycin and heat treatment, and its immunizing power in experimentally infected g. pigs was investigated. S/c injection of the vaccine gave fairly good protection, starting 3 days after inoculation and lasting up to 107 days. After 6 months' storage, the vaccine retained its immunizing power. It stimulated the formation of anti-brucella agglutinins in rabbits, but not in g. pigs. (The numbers of animals used in all tests were very small).

—I. W. JENNINGS.

BRODHAGE, H. (1956). Versuche mit Mycostatin zur Unterdrückung des Wachstums von Schimmelpilzen beim kulturellen Brucellennachweis aus Milchproben. [Use of mycostatin for suppressing the growth of fungi during the cultural examination of milk samples for brucella.] — *Z. Hyg. InfektKr.* **142**, 429-431. **3397**

The growth of fungi interfered with the cultural examination of milk samples for brucella, particularly in samples examined during the period November–April. This problem was overcome by adding 300–400 units of mycostatin per ml. of milk.—R. M.

MORSE, E. V. & McNUTT, S. H. (1956). Experimental leptospirosis. I. The course of *Leptospira pomona* infection in pregnant heifers.—*J. Amer. vet. med. Ass.* **128**, 225-229. **3398**

Of 7 pregnant heifers inoculated s/c, one aborted and one became severely ill. The organism could be recovered from the urine of all the animals, from the blood of 5, but from

none of the foetal tissues. P.M., all 7 had renal lesions. Agglutinin lysin serum antibodies were detectable within 14 days after infection.

—A. SEAMAN.

STOENNER, H. G. (1956). Application of serology to the diagnosis of leptospirosis.—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 172-176. Discussion: pp. 176-177. **3399**

The titres in the agglutination lysis test were influenced more by the density of antigen and the preparation of the dilutions than by the strains of *Leptospira*, age of culture or time of incubation of the serum. The interpretation of results is discussed.—T.E.G.R.

TERZIN, A. L. (1956). Leptospiral antigens for use in complement fixation. Boiling of the cultures and acetone treatment. — *J. Immunol.* **76**, 366-372. [Author's summary modified.] **3400**

The findings favour the use of boiled cultures as specific antigens in routine work, and a mixture of the less sensitive, acetone-treated antigens as group-diagnostic antigen in screening.

SCHUBERT, J. H., CARRINGTON, L. B., CONNER, E. & HOLDEMAN, L. V. (1956). Whole *Leptospira* suspensions as antigens in the complement-fixation test for leptospirosis.—*Amer. J. Hyg.* **63**, 254-260. [Authors' summary modified.] **3401**

Complement-fixing antigens containing 1.25% of organisms by volume were prepared from 7 *Leptospira* serotypes. The particulate (whole *Leptospira*) antigens were superior to other leptospiral antigens, i.e., whole culture, supernate (soluble) antigens, and ultrasonic treated antigens when used in the c.f. test with hyperimmune rabbit sera prepared against all 7 serotypes. The whole *Leptospira* antigen also gave good c.f. titres when tested with sera from naturally infected human beings, cows and dogs. The supernate antigen failed to fix complement with sera from infected human beings and cattle.

MURASCHI, T., CLEMONS, O. & TOMPKINS, V. (1956). Ethylene-glycol extracts of leptospirae in complement-fixation tests. — *Proc. Soc. exp. Biol., N.Y.* **92**, 274-277. [Authors' summary modified.] **3402**

A colloidal aqueous solution obtained by extraction of leptospira with ethylene glycol appears to be a complement-fixing antigen of considerable promise. Pooled extracts have broad valency and high sensitivity in the detection of leptospiral antibodies.

FREUDIGER, U. (1955). Zur Leptospirose des Hundes. Epidemiologie, Serologie, Pathologische Anatomie, Klinik und Pathogenese. [Leptospirosis in dogs.] — *Arch. exp. VetMed.* 9, 659-723 & 769-823. 3403

An extensive account, comprising a discussion of the literature and F.'s own observations. The subject is dealt with under the headings epidemiology, serology, pathological anatomy, symptoms, diagnosis, treatment and pathogenesis. There are 9½ pages of references.

—R.M.

LOW, D. G., HIATT, C. W., GLEISER, C. A. & BERGMAN, E. N. (1956). Experimental canine leptospirosis. I. *Leptospira icterohaemorrhagiae* infections in immature dogs.—*J. infect. Dis.* 98, 249-259. [Authors' summary modified.] 3404

LOW, D. G., BERGMAN, E. N., HIATT, C. W. & GLEISER, C. A. (1956). Experimental canine leptospirosis. II. Renal function studies.—*Ibid.* 260-265. [Abst. from authors' summary.] 3405

I. Inoculation of young dogs with *L. icterohaemorrhagiae* produced acute infections with symptoms ranging from subclinical to severe. Jaundice, which occurred in 47% of the dogs, appeared to be due to hepatocellular injury, and was accompanied in severe cases by a uraemia. Clinical, biochemical and gross pathological changes were described.

II. Renal function in infected dogs was studied by clearance tests. In moderate infections transient functional impairment occurred in dogs with slight increases in blood urea nitrogen concentration. No significant change in renal function occurred in dogs with mild infections.

FRANK, F. W. (1956). *Clostridium perfringens* type B from enterotoxaemia in young ruminants.—*Amer. J. vet. Res.* 17, 492-494. [Author's summary modified.] 3406

Evidence has been presented indicating the presence of enterotoxaemia in lambs and in calves in the U.S.A. due to *Cl. welchii* (*perfringens*) Type B. Cultures from presumed cases of Type C infection produced the ϵ toxin (major toxin of Type D). Lambs with enterotoxaemia due to the β toxin alone and the ϵ toxin alone were found in the same outbreak in a single flock.

BAKHTIN, A. G. (1956). [Dysentery of new-born piglets.] — *Veterinariya, Moscow*, 33, No. 6, pp. 30-32. [In Russian.] 3407

Clostridium welchii Type B was isolated

from acute, fatal dysentery of new-born piglets. The s/c inj. of bivalent lamb dysentery-pneumonia immune serum 2 hours after birth, together with the oral administration of "sintomylin," appeared to protect piglets from infection.—R.M.

SZENT-IVÁNYI, T. & SZABÓ, S. (1956). Infectious necrotic enteritis of sucking pigs. I. Etiology and pathology.—*Acta vet., hung.* 6, 217-229. [In English. Russian summary.] 3408

An English version of a paper previously published in Hungarian. [See *V.B.* 26, 1557.] —E.G.

SMITH, L. D. & JASMIN, A. M. (1956). The recovery of *Clostridium hemolyticum* from the livers and kidneys of apparently normal cattle.—*J. Amer. vet. med. Ass.* 129, 68-71. [Authors' summary modified.] 3409

Cl. haemolyticum was isolated on 4 occasions from the liver of apparently healthy cattle from herds in which bacillary haemoglobinuria had recently occurred. It was also isolated once from the kidney. It was recovered from the liver of one of 15 apparently healthy cattle from a farm on which the disease had not appeared for 5 years.

STONE, S. H. & GLAUBIGER, A. (1956). Agar diffusion studies of antigens in pepsin-digested horse tetanus antitoxin. — *J. Lab. clin. Med.* 47, 793-801. [Authors' summary and conclusions modified.] 3410

Immune (tetanus) horse plasma contains 8 to 10 antigens demonstrable by agar diffusion methods. Pepsin-digested tetanus antitoxin, prepared by a modification of the method of Pope, contains at least 4 antigens, as shown by agar diffusion tests. One of the antigens is not identical with a corresponding antigen in immune plasma and may be considered a component altered by the "despeciation" of the plasma. Two antigens in pepsin-digested antitoxin are identical with other antigens in immune plasma. A fourth antigen is present in horse plasma but cannot be demonstrated in the serum. The Ouchterlony agar diffusion method may be used to check despeciation procedures in laboratories manufacturing therapeutic sera.

KATIĆ, R. V. (1956). Labor-Untersuchungen über die Wirkung des D-Tubocurarinechlorides (1%) auf Intoxikation mit *Cl. botulin* C $_{\beta}$ Toxin. [Action of tubocurarine chloride on intoxication with *Cl. botulinum*

Type C_β toxin.]—*Schweiz. Arch. Tierheilk.* **98**, 244-251. [English, French and Italian summaries.] **3411**

Injection of 0.009 g. of d-tubocurarine chloride into white mice half an hour before a lethal dose of *Cl. botulinum* Type C toxin prevented intoxication only in 50% of cases, while an equal dose given 8 times daily had no effect on the clinical course of intoxication with *Cl. botulinum* Type B toxin.

Intoxication was prevented only when a mixture of a lethal dose of toxin with 0.009 g. d-tubocurarine chloride was injected. [In the summaries it is erroneously stated that the D toxin was used.]—F. K. LEEB.

APPELL, R. N., HARTSOUGH, G. R., MCCOY, E. F. & BRANDLY, C. A. (1956). **Active and passive protection of mink against Type C botulism with Type C toxoid and polyvalent antitoxin.**—*J. Amer. vet. med. Ass.* **128**, 556-558. [Authors' summary modified.] **3412**

Mink were protected against *Clostridium botulinum*, Type C, toxin mixed in the food, by vaccination with a Type C alumina gel adsorbate toxoid 55 or 84 days previously. An alum-precipitated toxoid provided little or no protection. The protective effect of botulinus antitoxin declined rapidly as the time after the ingestion of toxin increased; 12 hours after a large dose of the toxin (10 to 100 LD₅₀), treatment with antitoxin was of little value. Administration of magnesium sulphate soln. or water by stomach tube did not prevent losses among animals with advanced botulism.

RYFF, J. F. & BREEN, H. (1956). **In vitro and in vivo use of antibiotics against *Vibrio fetus*.**—*J. Amer. vet. med. Ass.* **128**, 521-523. **3413**

Twelve strains of *V. fetus* were susceptible *in vitro* to various antibiotics, but not to bacitracin. A single i/m injection of tetracycline, terramycin or streptomycin did not prevent abortions in infected sheep.—M.G.G.

HERBERT, D., ELSWORTH, R. & TELLING, R. C. (1956). **The continuous culture of bacteria; a theoretical and experimental study.**—*J. gen. Microbiol.* **14**, 601-622. [Authors' summary modified.] **3414**

The theory of continuous culture is described. It allows quantitative prediction of the steady-state concentrations of bacteria and substrate in the culture, and how these will vary with change of medium, concentration and rate of flow. The structure and operation of a small pilot plant for the continuous culture of bacteria

are described. This plant has been operated continuously for periods of up to 4 months without breakdown or contamination of the culture. No alterations in the properties of the bacteria have occurred. Results are given of a series of experiments on the continuous culture of *Bact. cloacae* in a chemically defined medium, designed to allow quantitative comparison with the predicted results. The relative advantages of continuous culture and culture in batches are discussed, and it is concluded that the yield of the continuous culture will usually be 5 to 10 times greater.

SCHWARZ, J. & BINGHAM, E. L. (1956). **The pathogenesis of canine histoplasmosis.**—*J. Amer. vet. med. Ass.* **128**, 611-613. [Authors' summary modified.] **3415**

Seven dogs from an endemic area of histoplasmosis had typical primary complexes consisting of discrete, generally single, sub-pleural nodules in the lungs and in the satellite lymph nodes. It was concluded that the lung is the principal portal of entrance for infection with *Histoplasma capsulatum* in dogs, as it is in man.

FAGAN, R. (1956). **Systemic fungous infections in dogs.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955, 280-286. [Author's summary modified.] **3416**

The symptoms, prevalence, diagnosis, and treatment are described of histoplasmosis, coccidioidomycosis, blastomycosis, and cryptococcosis in dogs. Epidemiological features are presented. In contrast to the dermatophytic infections, the systemic fungous infections do not appear to be contagious. Three cases of cryptococcosis in dogs are described.

UNDERWOOD, P. C., COLLINS, J. H., DURBIN, C. G., HODGES, F. A. & ZIMMERMAN, H. E., JR. (1956). **Critical tests with copper sulfate for experimental moniliasis (crop mycosis) of chickens and turkeys.**—*Poult. Sci.* **35**, 599-605. [Authors' summary modified.] **3417**

Experimental moniliasis (crop mycosis) was produced in chicks and poults by oral inoculation of suspensions of *Candida albicans*. Copper sulphate in the food and water did not cure or prevent the disease; in 2 of 5 trials it apparently favoured the establishment of *C. albicans* infection. The experimental disease was generally mild and asymptomatic.

RISTIC, M., HERZBERG, M., SANDERS, D. A. & WILLIAMS, J. W. (1956). **Actinobacillosis. I. An evaluation of cultural characteristics of selected strains of *Actinobacillus lignieresii*.**—

Amer. J. vet. Res. **17**, 555-562. [Authors' summary modified.] **3418**

Fourteen strains of *A. lignieresii* from stock collections or freshly isolated from cattle were studied. Dwarf, granular, and fluorescent variant colonies were observed. All strains except one behaved alike in their biochemical characteristics; none completely matched the description presented in Bergey's Manual. The 11-day-old chick embryo was susceptible to infection; g. pigs, hamsters, and rabbits were resistant; clinical bovine infections were induced by s/c inoculations. All the strains were susceptible to chlortetracycline, oxytetracycline and chloramphenicol *in vitro*.

MEYER, M. E. & CAMERON, H. S. (1956). **Studies on the etiological agent of epididymitis in rams.**—*Amer. J. vet. Res.* **17**, 495-497. **3419**

The cause of epididymitis of rams has previously been described as an organism closely related to *Brucella melitensis*. The authors examined an Australian and a Californian strain of the organism and found that the two strains were identical, but they did not metabolize amino acids and carbohydrates in the same way as *Br. melitensis*. Serum from 41 affected rams agglutinated an antigen prepared from the Californian strain, but did not agglutinate *Br. abortus* or *Br. melitensis* antigens. It was suggested that the organism was of the genus *Neisseria* and not *Brucella* [see also *V.B.* **23**, 2479 & 3293; **26**, 2837].—R.M.

ANON. (1956). **Pleuro-pneumonia contagiosa bovum: outbreaks in Eastern Australia, 1950-1953.**—*Health, Canberra.* **6**, pp. 55-59. **3420**

This review was compiled by the Commonwealth Division of Veterinary Hygiene from reports submitted by veterinary authorities of State Departments of Agriculture following the 1950-53 series of outbreaks which revealed a degree of insecurity in the control of bovine contagious pleuro-pneumonia. The nature of the disease, its spread from enzootic areas in northern Australia and methods of control and eradication are considered. There were 50 outbreaks in Queensland in 1950, 60 in New South Wales in 1952-53 and 91 in Victoria in 1952-54. The former quarantine period, 90 days after the last death, has been extended to 180 days in N.S.W. while in Victoria it is 98 days after two clean blood tests. Recommendations for future action from a national aspect have been made by the three eastern States. These are listed.

Three matters requiring further attention are:—more effective control aimed at eventual eradication of the disease in the Northern Territory, to prevent its reintroduction into Queensland; the employment of more staff, particularly in Queensland and northern New South Wales; the development of a more practical and efficient rapid test for use in the field.

—I. G. PEARSON.

GAMBLES, R. M. (1956). **Studies on contagious bovine pleuropneumonia. With special reference to the complement-fixation test.**—*Brit. vet. J.* **112**, 34-40; 78-86; 120-127, 162-169. **3421**

Immunization, diagnosis and experimental infection are briefly reviewed and the technique and interpretation of the c. f. test are discussed. Serological reactions to vaccination with attenuated culture vary though, on the whole, there is a tendency for good immunizing strains to set up definite reactions. Serological and/or local reactions produced by dried or fresh pleural exudate in susceptible, in immune and in non-susceptible species are recorded. Artificial infection was set up, in one case, by atomized spray with an incubation period of 12 weeks without serological reaction. A heat labile substance present in normal ox serum raises the c. f. titre. Unheated serum can be of value for the early diagnosis of the disease, but this method has its limitations owing to the possibility of non-specific reactions.—T.E.G.R.

DAFAALLA, E. N. (1956). **A preliminary investigation into the adjuvant action of some substances on dried contagious bovine pleuropneumonia organisms.**—*Vet. Rec.* **68**, 393-395. [Author's summary modified.] **3422**

Sixteen substances were examined for adjuvant action on dried pleuro-pneumonia organisms. Six mineral salts, starch, gum acacia, bovine gamma globulin and sesame oil were unsuccessful as adjuvants. Bovine albumin, liquid paraffin, and mucin gave hopeful results. Two out of 3 bulls vaccinated with dried organisms mixed with 10% bovine albumin, 2 out of 3 vaccinated with organisms in 0.5% mucin and 3 out of 4 vaccinated with organisms in liquid paraffin developed flocculating antibody and resistance to challenge. Of 24 bulls vaccinated with organisms in "Shell ondina 17" oil (a light form of liquid paraffin), 16 developed flocculating antibody and 17 resisted challenge. Egg yolk dried with the organisms and reconstituted in saline, to give final concentrations of 10% and 25% yolk; and mucin, similarly dried and reconstituted to give

a final conc. of 1%, stimulated antibody production and immunity on injection into groups of 3 cattle.

JUNGHERR, E. L., LUGINBUHL, R. E., TOURTELLOTTE, M. & BURR, W. E. (1956). **Significance of serological testing for chronic respiratory disease.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 315-321. Discussion: pp. 321-322. **3423**

Plate, whole blood, haemagglutination-inhibition and tube agglutination tests were evolved; their sensitivity was in the order mentioned. It is considered that these tests have a practical diagnostic value. The term "avian asterococcosis" is suggested for uncomplicated infection with pleuropneumonia-like organisms. —T.E.G.R.

MATHEY, W. J., JR., ADLER, H. E. & SIDDLE, P. J. (1956). **Isolation of a pleuropneumonia-like organism from pigeons.**—*Amer. J. vet. Res.* **17**, 521-522. [Authors' summary slightly modified.] **3424**

A pleuropneumonia-like organism from a mild respiratory disease of pigeons was isolated. The organism differed in fermentative ability, antigenicity, and pathogenicity for fowls and turkeys from strains found in fowls and turkeys.

YAMAMOTO, R. & ADLER, H. E. (1956). **The effect of certain antibiotics and chemical agents on pleuropneumonia-like organisms**

See also absts. 3520 (effect of tick-borne fever on resistance of lambs to staphylococci); 3650 (report, West of Scotland Agricultural College); 3651 (report, South African Institute for Medical Research); 3652-3653 (report, Veterinary Research Institute Mukteswar and Izatnagar); 3654 (report, Republic of Ireland); 3655 (report, Jamaica); 3656 (report, Sierra Leone); 3657 (book, human and bovine TB).

of avian origin.—*Amer. J. vet. Res.* **17**, 538-542. [Authors' summary modified.] **3425**

In vitro studies with strains of pleuropneumonia-like organisms of avian origin revealed that tetracycline and oxytetracycline were the most active; erythromycin, chlortetracycline, and streptomycin were slightly less active and dihydrostreptomycin was least active. A method of evaluating drugs in the embryonating hen's egg was described; the infectious agent was inoculated into the yolk sac, the drug into the allantoic cavity. The activity of several chemical agents tested against an antibiotic-sensitive strain by this method was barely significant. Of the antibiotics tested against an antibiotic-sensitive and a resistant strain, erythromycin and viridogrisein were the most active. The tetracycline drugs were slightly less active than erythromycin and viridogrisein; streptomycin and dihydrostreptomycin were the least active.

HOPWOOD, J. B. (1956). **Bacterial flora of the genital tract of ewes undergoing caesarian section.**—*J. comp. Path.* **66**, 187-196. [Author's conclusions modified.] **3426**

Of 43 ewes operated on by caesarian section the 13 that died had severe endometritis. A variety of bacteria was isolated but none could be incriminated as the primary cause of death. The potentially pathogenic organisms included *Corynebacterium pyogenes*, coliform bacilli, staphylococci and *Clostridium welchii*.

DISEASES CAUSED BY PROTOZOAN PARASITES

NASH, T. A. M. NORTHERN NIGERIA. (1956). **West African Institute for Trypanosomiasis Research. Annual Report 1955.**—pp. 46. Zaria, Nigeria: Gaskiya Corporation. **3427**

The report is divided into three main headings describing the work on human and animal trypanosomiasis and on the tsetse fly. **HUMAN TRYPANOSOMIASIS:** Experiments are elucidating the relationship between liver damage and serum gamma-globulin increase. Infective strains of *T. gambiense* have been maintained in rats by direct passage. The parasite in rats has predilection for the lung, while the spleen was the main site of parasite destruction. Metarsen was found valuable for treatment particularly in cases which relapsed after treatment with the routine drugs. There was cross resistance between drugs of this type

and diamidine. Fly-transmitted trypanosomes, while not more drug-resistant, can lodge in tissues inaccessible to drugs which easily kill them and needle-passaged parasites in the peripheral circulation. **ANIMAL TRYPANOSOMIASIS:** After four years' needle passage through rats the Ilorin strain of *T. vivax* has ceased to be transmissible by *G. palpalis*. Pupal and fly maintenance temperatures and mean length of trypanosome affected the infection of *G. palpalis* with *T. vivax*. Temperature influenced the development cycle. *T. vivax* appeared to be shorter and more virulent than in East Africa. When infected blood was injected into lambs the tissue at the injection site was infective for 48 hours; trypanosomes then appeared in the blood, and, after 96 hours, in the lymph nodes. The metabolic rate

of needle-passaged trypanosomes differed from that of naturally transmitted ones. Oxygen consumption of trypanosomes in different sera varied with the antibody titre. This phenomenon was used to assess the immune responses of N'Dama and zebu cattle. The addition of suramin increased the protective power, and decreased the toxicity, of 5 trypanocidal drugs. Antrycide was the only drug tested with success against *T. simiae*. **TSETSE FLY:**—Habits, preferences and infection rates of the various tsetse flies have been further elucidated. Two experiments in obstructive clearing indicated that it can eradicate the fly provided that isolation is complete.—R. G. MARES.

DESOWITZ, R. S. (1956). **Observations on the metabolism of *Trypanosoma vivax*.**—*Exp. Parasit.* **5**, 250-259. [Author's summary slightly modified.] **3428**

The metabolism of two strains of *T. vivax* was studied, one a strain adapted to rats and no longer capable of developing in the tsetse, the other a "natural" strain maintained in sheep by cyclical transmission through *Glossina palpalis*. The rates of oxygen consumption and glycolysis varied during the course of infection in both rats and sheep. Both strains were equally sensitive to cyanide, sodium monofluoroacetate, sodium arsenite, and reduced trypanamide. However, the sheep strain was more sensitive to iodoacetic acid and iodoacetamide. The metabolism of *T. vivax* appears to be of a type intermediate between those of the brucei and congolense groups.

HORTON-SMITH, C. & LONG, P. L. (1956). **Studies on histomoniasis. I. The infection of chickens (*Gallus gallus*) with histomonad suspensions.**—*Parasitology*. **46**, 79-90. **3429**

Chickens, 1-3 weeks old, in 4 groups, were used: (1) on normal feed to the time of infection, (2) starved for 18 hours up to the time of infection, (3) starved in a similar manner and dosed with an alkali mixture immediately before infection, (4) on normal feed and receiving the alkali mixture immediately before infection. They were dosed *per os* with the tissue phases of *Histomonas meleagridis* and examined P.M. 7-14 days later to determine the extent to which the caeca and liver were affected. The time of development and the extent of the lesions in chickens dosed with the tissue phases of *H. meleagridis*, or with infective *Heterakis* ova were also compared. Infection with the tissue phases of *H. meleagridis* could only be obtained when the chickens were starved, or had received the

alkali mixture. On the other hand the administration *per os* of *Heterakis* ova produced infections in normally fed chickens. Since the pH in the gizzard of fed chickens was 2.9 to 3.3 compared with 6.2 to 7.6 in starved or starved and alkali treated chickens, it appeared that an acid pH was lethal to the tissue phases of *H. meleagridis*. The organism was, however, protected in this environment when present in the ova of *Heterakis*, and it is concluded that this must be the usual vehicle of natural infections. The tissue phase of *H. meleagridis* gave the highest incidence of lesions at about the 7th day of infection with regression of lesions by the 14th day. *Heterakis* ova-induced infection gave a preponderance of lesions on the 11th day of infection. The technique of infection using the tissue phase of *H. meleagridis* as a means of testing the antiprotozoal activity of chemical compounds is discussed.—A. E. PIERCE.

FARR, M. M. (1956). **Survival of the protozoan parasite, *Histomonas meleagridis*, in feces of infected birds.**—*Cornell Vet.* **46**, 178-187. **3430**

Fresh droppings of fowls and turkeys containing *H. meleagridis* and eggs of *Heterakis gallinae*, *Ascaridia galli*, *A. dissimilis* and *Capillaria dujardini*, were distributed evenly over 4 well-drained outdoor plots to a depth of not more than 2 inches. To test the infectivity of the material, samples taken from the plots after 66 weeks were fed to chickens or to turkey poults. *Histomonas* survived (presumably within *Heterakis* eggs) for 66 weeks, as did the eggs of the *Heterakis*, *Ascaridia* and *Capillaria*.—S. BRIAN KENDALL.

BOTTI, L. (1956). **La giardiasi o lambliasi dei bovini. [*Giardia* infection in cattle.]**—*Zooprofilassi*. **11**, 79-82. [English and French summaries.] **3431**

B. reports for the first time in Italy, the presence of giardia infection in calves. In this outbreak, there were 5 fatal cases, death being preceded in each by violent haemorrhagic diarrhoea, tenesmus, prostration and collapse. Both vegetative and cystic forms of the protozoon were found in the intestinal contents of affected animals.—I. W. JENNINGS.

FERNANDO, S. T. (1956). **Coccidiosis in dogs in Ceylon: preliminary observations.**—*Ceylon vet. J.* **4**, 30-33. [Author's summary modified.] **3432**

Fourteen cases of canine coccidiosis were studied and the following species recorded:

Isospora rivolta from 8 cases, and *I. bigemina* from 6 cases. *I. bigemina* infection was transmitted to 4 out of 6 puppies. The prepatent period was 6 days. Treatment with sulphadimidine and sulphaguanidine gave encouraging results.

CARMICHAEL, J. (1956). Treatment and control of babesiosis. — *Ann. N.Y. Acad. Sci.* **64**, 147-151. 3433

C. discussed the treatment of *Babesia* infection with various drugs, the premunition of susceptible animals with an avirulent strain of *Babesia*, and methods of controlling ticks.

—M.G.G.

MATIKASHVILI, N. V. & TSOMAYA, I. V. (1955). [Treatment of *Theileria* infection of cattle with aminoacrichin.] — *Trud. gruzin. nauchno-issled. vet. Inst.* **11**, 201-203. [In Russian.] 3434

Aminoacrichin (a 7-aminoacridine derivative) was effective against *Theileria* infection of cattle in Georgia, when given i/v at a dosage of 3.5 mg. per kg. body wt. On one farm 45 cattle died before use of the drug commenced. A further 62 cases were treated and 54 recovered; the 8 which died were not treated until the third or fourth day of illness. Best results were obtained by administering the drug to every animal with a body temp. of over 40°C. Diagnosis was confirmed by the examination of blood smears. Up to three injections were required to bring about recovery.—R.M.

GATES, D. W. & ROBY, T. O. (1956). The status of the complement-fixation test for the diagnosis of anaplasmosis in 1955.—*Ann. N.Y. Acad. Sci.* **64**, 31-39. 3435

During 1954, in tests of 490 samples of serum from healthy and infected cattle, the c.f. test was accurate in 98% of cases. An eradication campaign is being conducted in the Hawaiian Islands, where the incidence of positive and doubtful reactors to the c.f. test is about 1%.—M.G.G.

SPLITTER, E. J., ANTHONY, H. D. & TWIEHAUS, M. J. (1956). *Anaplasma ovis* in the United States. Experimental studies with sheep and goats. — *Amer. J. vet. Res.* **17**, 487-491. [Authors' summary modified.] 3436

A. ovis was recovered from sheep from the Rocky Mountain area of the U.S.A. The organism produced subclinical anaemia in sheep and goats. Cattle could not be infected, nor did the parasite produce detectable immunity in cattle against *A. marginale*. Experimentally, this strain of *A. ovis* was more pathogenic for goats

than for sheep. An average reduction of 8.5 million erythrocytes per cu. mm. of blood occurred in goats compared with an average reduction of 4.3 million cells in sheep. Splenectomy increased the susceptibility of both. Cross antigenicity was observed between *A. ovis* and *A. marginale* in the complement-fixation test.

PIERCY, P. L. (1956). Transmission of anaplasmosis. — *Ann. N.Y. Acad. Sci.* **64**, 40-48. 3437

Using previous literature, P. discussed the relative importance of ticks, flies, mosquitoes, *in utero* transmission and contaminated surgical instruments in the propagation of anaplasmosis in the U.S.A.—M.G.G.

MILLER, J. G. (1956). The prevention and treatment of anaplasmosis. — *Ann. N.Y. Acad. Sci.* **64**, 49-55. 3438

A brief discussion of previous literature on this subject [see *V.B.* **19**, 2133; **22**, 2047; **23**, 2508; **24**, 80, 393, 1072 & 1843].—M.G.G.

LAINSON, R. (1956). Toxoplasmosis in England. III. *Toxoplasma* infection in dogs: the incidence of complement-fixing antibodies among dogs in London. — *Ann. trop. Med. Parasit.* **50**, 172-186. [Author's summary modified.] 3439

The available literature on toxoplasmosis in dogs is reviewed. Serological examinations in recent years suggest that a high percentage of dogs in different parts of the world have had contact with *Toxoplasma*, and may have chronic infections. Dogs in households where human toxoplasmosis has occurred commonly have antibodies for the parasite, and people who regularly handle dogs often have antibodies. *Toxoplasma* infection of the acute and fatal type is most frequent in young bitches, and is easily confused with atypical distemper or hard pad disease.

Of 113 sera from London dogs, 48 reacted to the c.f. test at a dilution of 1:8. The serum of one of 4 dogs from St. Albans was also positive. No correlation could be found between sex or breed and the presence of antibodies. A higher proportion of adult dogs was positive than dogs under one year of age. The percentage was slightly lower in dogs believed to have distemper than in those which were apparently healthy. Symptoms of unknown aetiology, such as blindness, skin trouble, gastritis and coughs, could not be correlated with the presence of antibodies. Of 14 London dogs examined for helminth infestation, 4 harboured species of *Taenia*. One had *T. pisiformis*, an-

other had *T. hydatigena*, indicating that they had eaten raw mutton or pork. Both had antibodies for *Toxoplasma*. It is suggested that the risks of *Toxoplasma* infection through raw meat for dogs in urban areas may be greater than is generally supposed.

Since a sudden increase in the virulence of certain strains follows transfer to a different host species, it is suggested that, in the epidemiology of human toxoplasmosis, attention should be given to inapparent chronic infections in animals. A 21-week-old bitch inoculated with a rabbit strain of *Toxoplasma* had parasitaemia for a week, followed by a completely symptomless chronic infection. *Toxoplasma* was isolated from the animal's tissues 4 months later. These findings support the suggestion that dogs may be an important reservoir of *Toxoplasma* infection for man.

Although the domestic cat appears to run a greater risk of infection than the dog, few cases of toxoplasmosis in cats are recorded. Serological studies suggest, however, that the number with chronic infections may be high.

CHANDLER, A. H. & WEINMAN, D. (1956). **Prolonged storage of toxoplasma at -70°C. A preliminary report.**—*Amer. J. clin. Path.* **26**, 323-326. [Interlingua summary.] **3440**

Toxoplasms from the peritoneal fluid of artificially infected mice were preserved at -70°C. in 15% glycerol for 184 days—the longest period tested. The technique resulted in a mortality of over 99% of the organisms so that not less than 2×10^7 toxoplasma should be preserved to ensure the subsequent infectivity of the sample.—A. E. PIERCE.

FRENKEL, J. K. (1956). **Pathogenesis of toxoplasmosis and of infections with organisms resembling *Toxoplasma*.**—*Ann. N.Y. Acad. Sci.* **64**, 215-251. [Author's summary modified.] **3441**

More asymptomatic than clinical cases of toxoplasmosis occur. Hence the development of lesions and disease is atypical when compared with the more common types of host-*Toxoplasma* relationships. The interactions between host and parasite, starting with the generalized acute infection, are traced through partial states of immunity, with lesions centred in the c.n.s., to the chronic infection which may or may not be symptomatic. Reactivation of lesions may follow owing to the waning of immunity in the retina and the adrenal cortex, or following the exogenous administration of anti-inflammatory corticoids. The dual pathogenesis of lesions is described as relating to the destruction by proliferative organisms of individual infected cells, and to that following cyst rupture in the partially immune and often hypersensitive host. The following microorganisms are briefly discussed since, because of their morphological resemblance to *Toxoplasma*, they present differential diagnostic problems: *Encephalitozoon*, an organism temporarily designated the "*Microtus (M)-organism*" from field mice, *Sarcocystis*, *Besnoitia*, *Globidium*, leishmaniform-stages of *Trypanosoma cruzi*, *Cryptococcus (Torula)*, *Histoplasma*, and *Klossiella*.

MORRIS, J. A., McCOWN, J. M. & BLOUNT, R. E. (1956). **Ascites and hepatosplenomegaly in mice associated with protozoan-like cytoplasmic structures.**—*J. infect. Dis.* **98**, 306-311. [Authors' summary modified.] **3442**

An enzootic disease of mice characterized by ascites, hepatosplenomegaly and presence of intracellular structures resembling protozoa is reported. The causal agent appears to differ from a number of known agents of similar diseases in mice and may be a new protozoon. Certain of the pathogenic, cultural and physical properties are described.

See also absts. 3652-3653 (Report, Veterinary Research Institute Mukteswar and Izatnagar); 3655 (report, Jamaica); 3656 (report, Sierra Leone).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

NORDBERG, B. K. & SCHJERNING-THIESEN, K. (1956). **Detection of complement fixing antibodies against foot-and-mouth disease in cattle serum.**—*J. infect. Dis.* **98**, 266-269. [Authors' summary modified.] **3443**

Antibodies against F. & M. disease are more readily demonstrable in cattle serum if the serum component in complement fixation is inactivated by temporary hypertonicization, instead of by heating at 56°C. for 30 min.

FREDERIKS, H. H. J. (1956). **Research on foot-and-mouth disease. X. The titration of cultivated foot-and-mouth disease virus (Frenkel) in cattle compared with the titer obtained in the quantitative complement-fixation test.**—*Amer. J. vet. Res.* **17**, 455-462. [Author's summary modified.] **3444**

Titration of 181 cultures of F. & M. disease virus revealed a definite correlation between the complement-fixation titration and the titration

method employing susceptible cattle. That amount of cultural virus required to fix one unit of complement corresponded with 128,000 ID₅₀ of type A virus; with 100,000 ID₅₀ of type C virus; and with 125,000 ID₅₀ of type O virus. Animals injected s/c with 15 ml. of vaccine, which had been evaluated by the c.f. method, were refractive when challenged three months later.

ARAMBURU, H. G. (1955). Tipificación del virus aftoso. [Typing of foot and mouth disease virus.]—*Bol. Ofic. sanit. pan-amer.* 39, 365-380. 3445

A conventional account of tests for the identification of the types of F. & M. disease virus and for differential diagnosis; the complement-fixation test is considered the most reliable.—T.E.G.R.

VOINOV, S. I. (1956). [Resistance of the virus of foot and mouth disease on pastures.]—*Veterinariya, Moscow.* 33, No. 6. pp. 66-67. [In Russian.] 3446

The virus of F. & M. disease did not live for longer than 2-5 days on pasture and steppe in Uzbekistan during the period June to September (average air temp. 24.6-27.4°C.).

—R.M.

BOŬKO, A. A. (1956). [Method for active immunization of farm animals against foot and mouth disease.]—*Veterinariya, Moscow.* 33, No. 5. pp. 26-29. [In Russian.] 3447

B. discussed the immunization of cattle against F. & M. disease by the inoculation of vaccine under the mucous membrane of the upper lip. Although the use of this method apparently gave good results in the field, the results of small-scale lab. tests were unsatisfactory when compared with inoculation by the subcutaneous route.—R.M.

SOLOMKIN, P. S. & TUTUSHIN, M. I. (1956). [Viability of the virus of Ajueszky's disease in fodder and on products of animal origin.]—*Veterinariya, Moscow.* 33, No. 4. pp. 49-50. [In Russian.] 3448

The survival of the virus of Ajueszky's disease under various climatic conditions and on hay, straw, sacks, twine, wooden boards, potatoes, bran and oats, was estimated. In winter (average temp. -8°C.) it survived for 35-46 days; in summer (av. temp. 25°C.) 10-30 days; in autumn (av. temp. 14° to 18°C.) 5-30 days.—R.M.

FLIR, K. (1955). Zur Pathologie des Morbus Ajueszky beim Hund. [Pathology of

Ajueszky's disease in dogs.]—*Arch. exp. Vet.Med.* 9, 949-956. 3449

The virus of Ajueszky's disease, when circulating in the blood, attacked heart muscle causing focal degenerative lesions. Severe brain lesions occurred when the virus gained entry through a peripheral nerve, and apparently not as a result of haematogenous infection.

—R.M.

WELLS, C. W. (1956). A summary of the 1952-1954 rabies control campaign in Malaya with particular reference to the use of chick-embryo vaccine before and after eradication has been effected. I.—*Brit. vet. J.* 112, 219-228. [Author's summary modified.] 3450

WESTGARTH, D. R. (1956). A summary of the 1952-1954 rabies control campaign in Malaya. II. Forecasting the proportion of vaccinated animals.—*Ibid.* 228-238. [Author's summary modified.] 3451

I. Rabies had been endemic in the northern part of Malaya for not less than 30 years before it spread to the south in 1952. Earlier attempts to control outbreaks by legislation, destruction of stray dogs, and the use of a Semple type vaccine had had only limited success. A national, compulsory, mass vaccination programme was carried out between 1952 and 1954, the principal features of which are described. From an annual average incidence of 112 confirmed cases in dogs for the years 1947-51, and a total of 198 in 1952, the incidence fell to 15 for the first half of 1953. No case in a dog has been reported since June 1953. This is attributed to the chick embryo vaccine (Flury strain) and stringent legislation. A recent W.H.O. proposal for vaccination every 3 years is considered to be impracticable in Malaya.

II. The theoretical models are considered sufficiently valid to justify a claim that vaccination of dogs in Malaya every 3 years will be too infrequent to maintain a high proportion of immune animals.

GRILLO TORRADO, J. M. & GIACOSA, A. M. (1955). La prueba de absorción de complemento conglutinante en rabia y su comparación con la prueba de fijación de complemento hemolítico. [The conglutination test in rabies.]—*Rev. Med. vet., B. Aires.* 37, 113-119. [English and French summaries.] 3452

The conglutination test was compared with the c.f. test for the diagnosis of rabies. The antigen was prepared by the method of Casals and Palacios [*V.B.* 12, p. 488], using rabbit

instead of mouse brain. The tests were equally sensitive, but the c.f. test allowed more precise readings.—M.G.G.

WELSH, M. (1955). Estado actual del problema de la vacunación con vacuna avianizada Flury. [Present status of vaccination with avianized Flury vaccine.] — *Bol. Ofic. sanit. pan-amer.* **39**, 357-364. [English summary.] **3453**

In this general article on anti-rabies vaccination it is stated that one injection of avianized Flury vaccine protects dogs for 39 months. The immunization of cattle and cats with this vaccine is also envisaged. The simultaneous use of hyperimmune serum is considered beneficial in severe face bites, but its cost is prohibitive.—T.E.G.R.

MAYR, A. (1956). Experimentelle Arbeiten über das hämagglutinierende Prinzip bei den Tierpockenviren. [The haemagglutinating principle in animal pox viruses.] — *Arch. ges. Virusforsch.* **6**, 439-471. **3454**

Haemagglutination by vaccinia, cow pox, fowl pox, and ectromelia viruses was species-specific. The haemagglutinating principle consisted of two components: one was associated with the elementary bodies of the virus and the other was a soluble, separable agglutinin. Fowl pox virus contained more soluble agglutinin than the other pox viruses. A suitable antigen for the haemagglutination-inhibition test was obtained from the chorio-allantoic membrane of infected, incubated hens' eggs; it was heated for 30 min. at 56°C. to destroy non-specific agglutinins. The haemagglutinating properties of the viruses studied did not change after 20 egg passages.—R.M.

AYGÜN, S. T. (1955). The propagation of variola ovina virus in sheep embryonic tissue cultures and its usefulness as a vaccine against this disease.—*Arch. exp. VetMed.* **9**, 415-441. [In English.] **3455**

Sheep pox virus was propagated in roller-tube cultures of the lung and skin tissue of sheep embryos. After 15 serial passages i/d injection of 0.2 ml. culture fluid was innocuous for sheep: after 12 days they were immune from infection by contact or by inoculation of virulent virus. Immunization of 270,000 sheep by this method in Turkey was stated to have given good results. Duration of immunity was not stated.—R.M.

SEEGER, K. C. & PRICE, R. J. (1956). Evaluation of immunity to fowl pox. I. Immunization of young chicks with pigeon- and fowl-

pox vaccines. — *Poult. Sci.* **35**, 372-379. [Abst. from authors' summary.] **3456**

PRICE, R. J. & SEEGER, K. C. (1956). Evaluation of immunity to fowl pox. II. Immunization of young chicks with fowl-pox vaccine. — *Ibid.* 379-384. [Authors' summary modified.] **3457**

I. Pigeon-pox vaccine administered by different numbers of wing-web punctures, to 1, 5, 10 and 15-day-old chicks, was not an effective immunizing agent against fowl pox; whereas fowl pox vaccine, in standard dilution, administered by one wing-web puncture at 1, 5, 10 and 15 days of age, was highly effective.

II. Immunity declined between 40 and 80 days after vaccination. The best results were obtained when day-old chicks were inoculated with vaccine in standard dilution.—M.G.G.

GOLDHAFT, T. M. (1956). A new method of application of pigeon pox vaccine.—*J. Amer. vet. med. Ass.* **128**, 596-601. **3458**

After the removal of feathers from the thigh, the exposed follicles of fowls were sprayed with pigeon pox vaccine in a diluent containing glycerol. Subsequent swelling of the follicles revealed a high proportion of reacting birds. Good results were also reported with day-old chicks. Challenge infection with fowl pox virus revealed that immunity lasts for at least 12 weeks.—M.G.G.

YAMAGIWA, S. (1955). Comparative pathological investigation on encephalitis of domestic animals; especially on the eosinophilic encephalitis of swine and distemper encephalitis. — *Jap. J. vet. Res.* **3**, 41-72; 153-170. [In English.] **3459**

A comprehensive discussion of the histopathology and the distribution of lesions in the different sorts of encephalitis of domestic animals with special reference to eosinophilic encephalitis of pigs and distemper encephalitis. It was considered that the classification of encephalitis should be based on the tissues affected, viz., glia cells, mesoderm and a combination of the two.—T.E.G.R.

I. CHAMBERLAIN, R. W., KISSLING, R. E., STAMM, D. D., NELSON, D. B. & SIKES, R. K. (1956). Venezuelan equine encephalomyelitis in wild birds.—*Amer. J. Hyg.* **63**, 261-273. [Authors' summary slightly modified.] **3460**

II. KISSLING, R. E., CHAMBERLAIN, R. W., NELSON, D. B. & STAMM, D. D. (1956). Venezuelan equine encephalomyelitis in

horses.—*Ibid.* 63, 274-287. [Authors' summary modified.] 3461

I. Wild birds were infected with Venezuelan equine encephalomyelitis virus by subcutaneous inoculation and by the bite of infected *Aedes triseriatus* mosquitoes. The amount of virus circulating in their blood during infection and the amount of neutralizing antibody subsequently developed were determined. Usually the infections were symptomless. Normal mosquitoes were infected by feeding upon infected birds, and transmission of the disease by mosquito bite from English sparrow to English sparrow was accomplished. The infection threshold for *A. triseriatus* was determined. Proof of virus multiplication in the mosquito was obtained. The possible role of birds in the natural disease cycle was discussed.

II. Horses succumbed to infection after subcutaneous injection of as little as 32 mouse LD₅₀ of the virus. Horse-to-horse and g. pig-to-horse transmission of the infection was obtained when *Aedes triseriatus* was used as the transmitting mosquito. Infection of *Mansonia indubitans* and *M. titillans* from an infected horse was accomplished. Attempts to isolate virus from the eggs of infected *A. triseriatus* were unsuccessful. Horses were susceptible to intranasal instillation of the virus. Virus was shed in the nose, eye and mouth secretions, urine, and milk of an infected horse. Transmission was made from horse to horse by direct contact. The clinical disease in horses does not always present signs of c.n.s. involvement. Pathological changes consistently included pancreatic lesions and involvement of haematopoietic tissues.

I. SNOW, G. A. & HURST, E. WESTON. (1956). Distribution of mepacrine in the organs of different animal species, and in the components of liver cells.—*Brit. J. Pharmacol.* 11, 209-214. [Authors' summary modified.] 3462

II. GOODALL, R. R. (1956). Mepacrine metabolism: an examination of mouse liver for possible antiviral metabolites.—*Ibid.* 215-219. [Author's summary slightly modified.] 3463

I. Concentrations of mepacrine in the liver, spleen, and kidney were measured in mice, rats, g. pigs, chicks and rabbits at different times after administration of a single massive dose. Mice and rats—the only species which mepacrine protects against infection with Eastern equine encephalomyelitis—were distinguished by exceptionally high concentrations in the liver. Although this correlation may be significant, evidence suggests that

other factors are present. The bulk of the acridine in the mouse liver was in the mitochondrial fraction, with decreasing amounts in the nuclear, microsomal and cell plasma fractions respectively. The difference in concentrations between the components was greatest when the total acridine in the organ was at a maximum. Distribution of the drug in the components of the g. pig liver was probably similar.

II. Mice were given mepacrine hydrochloride by mouth. After 48 hours the livers were examined for metabolites. Of the acridine extracted, 94% was mepacrine; the remainder was separated into 3 distinct fractions by countercurrent distribution methods. The fractions contained metabolites having infra-red spectra comparable to those of model compounds in which the side chain has been modified. The metabolites exhibited no significant biological activity against Eastern equine encephalomyelitis in mouse (after intraperitoneal injection). From 26 to 38% of the mepacrine isolated was in the form of phosphatide salts, which are very soluble in fat solvents and are not decomposed by dilute hydrochloric acid. The persistence of mepacrine in tissue is probably due in part to the formation of these salts with the cell lipids. Yet it is not possible to attribute depot effects to these salts, since the mepacrine salt of an acidic phosphatide prepared from ox-brain was not superior to mepacrine hydrochloride as an individual drug in mice.

GREENHALGH, N., HULL, R. & HURST, E. WESTON. (1956). The antiviral activity of acridines in Eastern equine encephalomyelitis, Rift Valley fever and psittacosis in mice, and lymphogranuloma venereum in chick-embryos.—*Brit. J. Pharmacol.* 11, 220-224. [Authors' summary modified.] 3464

Of 83 acridines examined, some showed therapeutic activity against equine encephalomyelitis in mice. The activity was never significantly greater than that of mepacrine. Major activity was always associated with "persistent" coloration of the tissues by the drug, and by the formation of basophil particles. The converse did not hold. Minor apparent activity might or might not be associated with these phenomena. Three dialkyl-aminoalkylamine and seven quinoline derivatives had no beneficial effect. The results of testing a few compounds against Rift Valley fever in mice agreed well with those in equine encephalomyelitis. Many acridines are very poorly toler-

ated by the chick embryo and cannot be administered in doses likely to be effective against lymphogranuloma venereum virus; 33 compounds were inactive against this virus in the yolk sac. Three nitroacridines were considerably active against psittacosis in mice, but were inactive against equine encephalomyelitis. The factor determining therapeutic activity against the largest or the smaller viruses is not the $-NO_2$ group, because one nitroacridine was active against equine encephalomyelitis. No compound was found which was active against both small and large viruses.

MATTHIAS, D. & SCHMIDT, D. (1955). Die diagnostische Bedeutung der Soventol-Reaktion bei der ansteckenden Blutarmut der Pferde. [**Significance of the soventol reaction in the diagnosis of equine infectious anaemia.**]—*Arch. exp. VetMed.* **9**, 899-909. **3465**

According to Schützler & Schoop [*V.B.* **25**, 2544] the turbidity reaction produced by adding soventol soln. to serum was of diagnostic value in equine infectious anaemia. The present authors examined 421 sera and were unable to demonstrate any difference between the reaction of sera from infected and uninfected horses.—R.M.

STEIN, C. D. & SONGER, J. R. (1956). **Some observations on further attempts to transmit equine infectious anemia to lambs and pigs.**—*J. Amer. vet. med. Ass.* **128**, 604-608. **3466**

Equine infectious anaemia failed to develop in lambs and piglets inoculated s/c with virulent horse serum. Histological examination 36 days after inoculation was negative. Blood samples taken on the 36th day were pooled and injected into horses. The horses did not develop anaemia and were later susceptible to the disease.—M.G.G.

OLEŇNIK, N. K., YAZUIKOVA, K. N. & VORONIN, I. I. (1955). [**Virus abortion in horses.**]—*Nauch. Trud. ukrain. Inst. exp. Vet.* **22**, 71-80. [In Russian.] **3467**

Thirteen mares aborted on one farm in the Ukraine during the 10th or 11th month of pregnancy, and 14 on another farm. Bacteriological examination was negative. The clinical and pathological features closely resembled those of equine virus abortion. There was apparently no attempt to isolate a virus. It was stated that the disease has not been recorded in the U.S.S.R. before.—R.M.

RANDALL, C. C. & BRACKEN, E. C. (1956). **Hepatitis in hamsters inoculated with equine abortion virus: development of inclusions**

and growth cycle.—*Fed. Proc.* **15**, 528-529. [Only abst. given. Abst. from abst.] **3468**

Six hours after i/p infection of hamsters, inclusion bodies were observed in a small number of the liver parenchymal cells. After 9 hours, however, more than 99% of the cells contained inclusion bodies.—M.G.G.

MCKERCHER, D. G., MOULTON, J. E., KENDRICK, J. W. & SAITO, J. (1956). **Recent developments on upper respiratory disease of cattle.**—*Proc. 59th Ann. Meet. U.S. live Stk sanit. Ass.* 1955. 151-167. [Authors' summary modified.] **3469**

A respiratory disease which has occurred in fattening cattle in California during 1954-55 is described briefly with regard to its epidemiology and clinical features. Experimental studies revealed that: (1) it can be transmitted by inoculation, (2) it is caused by a virus, and (3) it is identical with a cattle disease syndrome referred to in Colorado as rhinotracheitis. It is suggested that the disease be called "infectious bovine rhinotracheitis".

CHOW, T. L., DEEM, A. W. & JENSEN, R. (1956). **Infectious rhinotracheitis in cattle. II. Experimental reproduction.**—*Proc. 59th Ann. Meet. U.S. live Stk sanit. Ass.* 1955. 168-172. [Authors' summary modified.] **3470**

Fifteen cattle were inoculated with nasal and tracheal secretions and exudates, blood, and splenic tissue from field cases of rhinotracheitis; 9 developed nasal discharge and fever, 3 developed nasal discharge only, one developed transient fever and 2 remained normal. Bacteria-free inocula caused rhinotracheitis in susceptible cattle. The causal agent may be a virus and was demonstrated in nasal and tracheal secretions and exudates, blood, and spleen. The incubation period varied from 3 to 6 days.

PRITCHARD, W. R. (1956). **The mucosal diseases of cattle—epizootiology, symptomatology, and experimental studies.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 37-42. [Author's summary modified.] **3471**

The mucosal diseases of cattle are discussed from the aspect of clinical diagnosis. Mucosal disease is discussed in detail and virus diarrhoea-New York, virus diarrhoea-Indiana, Childs' cattle disease, upper respiratory disease, and necrotic rhinitis and tracheitis are compared to it. Bovine malignant catarrh and rinderpest are discussed briefly and compared to the mucosal diseases. Data are presented which indicate that subclinical mucosal disease

occurs in animals in affected herds. Some results of successful transmission studies are presented.

PRITCHARD, W. R., CARLSON, R. G., MOSES, H. E. & TAYLOR, D. E. B. (1956). **Virus diarrhea and mucosal disease.**—*Proc. 59th Ann. Meet. U.S. live Stk sanit. Ass.* 1955. 173-188. [Authors' summary modified.] 3472

The chief clinical and pathological aspects of virus diarrhoea and mucosal disease in Indiana are discussed and compared. Cross-protection studies indicate that immunological differences may exist between virus diarrhoea—New York, mucosal disease, and virus diarrhoea—Indiana.

SCOTT, G. R., WEDDELL, W. & REID, D. (1956). **Preliminary findings on the prevalence of Rift Valley fever in Kenya cattle.**—*Bull. Epiz. Dis. Afr.* 4, 17-25. In French pp. 97-101. [Authors' summary modified.] 3473

From 1952-54 Rift Valley fever in cattle occurred in a clearly defined area of Kenya between 4,500 and 6,000 ft. above sea level. Inapparent infections were common. The number of cattle sera containing antibodies was always at its height in February. No relationship was detected between abortion and the presence of antibodies in the serum 2 weeks later.

MIMS, C. A. (1956). **The coagulation defect in Rift Valley fever and yellow fever virus infections.**—*Ann. trop. Med. Parasit.* 50, 147-149. [Author's summary modified.] 3474

Mice inoculated with Rift Valley fever virus had little or no prothrombin in the plasma. This deficiency, which is associated with severe liver damage, prolongs the clotting time, and is a probable cause of the haemorrhagic phenomena observed in infected mice. Prothrombin deficiency also occurred in rhesus monkeys with yellow fever.

DUNNE, H. W., REICH, C. V., HOKANSON, J. F. & LINDSTROM, E. S. (1956). **Variations in the virus of hog cholera. A study of chronic cases.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 148-153. [Authors' summary modified.] 3475

Most cases of chronic swine fever occurred during virus titration experiments from doses approaching the MLD₅₀. However, evidence that virus dilution was not the sole factor involved was seen in cases from contact infection and from inoculation with serially passaged undiluted virus from a chronic case.

Sonic vibration of the virus produced several chronic cases. The virus reverted to a highly acute type after further passage. Further experiments did not prove that chronic infection was associated with sonic treatment of the virus. Pathological changes in chronic infection included a purple blotching of the ears, chronic rib lesions characterized by transverse calcified areas in the ribs near the costochondral junction, and secondary infection usually in the form of necrotic enteritis of the large intestine.

SATO, U. & SUGIMURA, K. (1955). **[Studies on the mixed infection of hog cholera. II. Isolation of *Corynebacterium pseudopyogenes*.]**—*Jap. J. vet. Sci.* 17, 101-107. [In Japanese. Abst. from English summary. For part I, see *V.B.* 26, 2886.] 3476

An organism (designated *C. pseudopyogenes*) was isolated from lung lesions in 28 of 95 pigs which had been injected with formalized swine fever vaccine and died after challenge with virus. The organism differs biochemically from *C. pyogenes* but is considered similar to it in other respects.

—T.E.G.R.

I. KULESKO, I. I. & ANDREEV, E. V. (1954). **[Tissue vaccine against swine fever.]**—*Nauch. Trud. ukrain. Inst. exp. Vet.* 21, 5-19. [In Russian.] 3477

II. KULESKO, I. I. & ANDREEV, E. V. (1955). **[Further trials with tissue vaccine against swine fever.]**—*Ibid.* 22, pp. 5-13. [In Russian.] 3478

I. A single s/c inoculation of 10 ml. of formalized tissue vaccine was safe and gave an immunity for up to 6 months. The vaccine could be stored for a year at 5° to 12°C. without loss of activity.

II. Trials with 7,000 pigs on 4 farms were successful. With young pigs better results were obtained by the administration of 3 doses each of 3 ml., or 5 doses each of 2 ml., separated by intervals of 48 or 72 hours, than by a single inoculation of 10 ml.—R.M.

PATTISON, I. H. (1956). **A histological study of a transmissible pneumonia of pigs characterised by extensive lymphoid hyperplasia.**—*Vet. Rec.* 68, 490-494. [Author's summary modified.] 3479

A constant histological picture was seen in pigs inoculated intratracheally with the "M.R." strain of virus pneumonia of pigs and in pigs affected during a natural outbreak of a clinically similar disease. The outstanding

abnormality was extensive lymphoid hyperplasia of predominantly peribronchial, peribronchiolar and perivascular distribution. The course of the disease was followed histologically after experimental inoculation. Although pneumonia characterized by lymphoid hyperplasia was clearly associated with virus pneumonia, it has yet to be determined whether the virus is the only cause of this lesion. Examination of the lungs of pigs from various sources, all with the lesions regarded as typical of virus pneumonia, revealed so wide a variation in the histological picture that it was concluded that other causes of these lesions must exist, and histological examination offers a more specific method of diagnosis than examination with the naked eye.

SCHOFIELD, F. W. (1956). **Virus pneumonia-like (VPP) lesions in the lungs of Canadian swine.**—*Canad. J. comp. Med.* **20**, 252-266. **3480**

Macroscopic and microscopic evidence demonstrates the presence of a lung infection in pigs resembling "virus pig pneumonia", in five Canadian provinces. It is believed that the disease is prevalent wherever pig populations are large. Difficulties experienced in research on respiratory diseases of pigs are discussed and suggestions are made for the production and use of piglets free from bacterial contamination for such studies.—R. V. L. WALKER.

PLACIDI, L. (1956). Sur une infection pulmonaire, contagieuse, endémique, du porc rapportée à un ultra-virus, indépendante de la peste. [A pulmonary, contagious, endemic disease of pigs in Morocco, caused by a virus unrelated to that of swine fever.]—*Bull. Acad. vét. Fr.* **29**, 59-65. **3481**

A further discussion of the infection previously described by Placidi & Haag [*V.B.* **26**, 2303 & 3164]. The disease is purely pulmonary, and its onset is influenced by changes in temperature, rain and wind. So far, it has proved impossible to make a vaccine, but vaccination with Newcastle disease virus provides some protection. The actual identity of the virus remains obscure, but it appears to resemble the human influenza virus in some respects. Injection of aureomycin is the treatment recommended.—I. W. JENNINGS.

KILHAM, L. (1956). **Serological studies of canine distemper—complement fixation with spleen antigens.**—*Amer. J. vet. Res.* **17**, 398-401. [Author's summary modified.] **3482**
Increase of complement-fixing antibody

was demonstrated in sera from ferrets, raccoons, and skunks inoculated with freshly isolated distemper virus. Antigens prepared from infected spleen, when used in c.f. tests, appeared to be specific within the group of carnivores tested. Spleen as well as serum from diseased animals was suitable for the c.f. test for diagnostic purposes. Neutralization tests in unweaned mice proved useful in confirming results obtained by other methods.

FIELDSTEEL, A. H. (1956). **Some aspects of infectious canine hepatitis virus in tissue culture.**—*Amer. J. vet. Res.* **17**, 380-388. **3483**

F. described the use of tissue culture methods for the cultivation of the virus, and diagnosis of the disease [see also *V.B.* **25**, 687]. The virus, modified by repeated passage in tissue culture, produced immunity when inoculated parenterally into dogs. It was excreted in the urine of inoculated dogs, and reverted to a virulent strain after 4 passages in dogs.—R.M.

SCHINDLER, R. (1956). Versuche zur quantitativen Bestimmung des Antikörpers gegen das Virus der Hepatitis contagiosa canis mit Hilfe der intraoculären Injektion der Serum-virusmischung. [Quantitative evaluation of canine virus hepatitis antibodies with the aid of intra-ocular injection of a serum-virus mixture.]—*Tierärztl. Umsch.* **11**, 9-10. **3484**

Clouding of the cornea was produced in dogs by injection of canine hepatitis virus into the anterior chamber of the eye. The cornea remained clear when the virus suspension was mixed with sufficient antiserum before injection. As this method is expensive and lengthy, the tissue culture method of Cabasso *et al.* [*V.B.* **24**, 3149] is considered to be more suitable.—M.G.G.

MACPHERSON, L. W. (1956). **Feline enteritis virus—its transmission to mink under natural and experimental conditions.**—*Canad. J. comp. Med.* **20**, 197-202. [French summary.] **3485**

An outbreak was found to be due to a virus immunologically identical with that of feline enteritis. Studies revealed a carrier state in recovered animals, but attempts to infect lab. animals were unsuccessful.—R.V.L. WALKER.

WILLS, G. & BELCHER, J. (1956). **The prevention of virus enteritis of mink with commercial feline panleukopenia vaccine.**—*J. Amer. vet. med. Ass.* **128**, 559-560. [Authors' summary and conclusions modified.] **3486**

All except one of 37 mink vaccinated with commercial feline panleucopenia vaccine were strongly protected against challenge with mink enteritis virus. Enteritis developed in 25 of 37 unvaccinated controls, 9 of which died. This supports the proposition that virus enteritis of mink is caused by the virus of feline panleucopenia.

KÖTSCHKE, W. (1955). Beitrag zur Histopathogenese der Myxomatose der Kaninchen. [**Histopathogenesis of myxomatosis in rabbits.**]—*Arch. exp. VetMed.* **9**, 852-875. **3487**

An account of histological changes in the skin, subcutaneous tissue, lymph nodes, and at the site of infection, during the first 6 days after s/c inoculation of rabbits with the virus of myxomatosis. There are 18 photomicrographs.—R.M.

I. DAY, M. F., FENNER, F., WOODROOFE, G. M. & MCINTYRE, G. A. (1956). **Further studies on the mechanism of mosquito transmission of myxomatosis in the European rabbit.**—*J. Hyg., Camb.* **54**, 258-283. [Abst. from authors' summary.] **3488**

II. FENNER, F., DAY, M. F. & WOODROOFE, G. M. (1956). **Epidemiological consequences of the mechanical transmission of myxomatosis by mosquitoes.**—*Ibid.* 284-303. [Abst. from authors' summary.] **3489**

I. There was no evidence of multiplication of myxoma virus in *Aedes aegypti* and *Anopheles annulipes*. Quantitative information was obtained on the virus load of probing mosquitoes, and the rates of loss with probing and the passage of time. Myxoma virus in normal rabbit serum had a half-life of 11 days at 4° C., 5 days at 18-20° C., and 31 hours at 27-28° C. Barring losses from probing (about 12% of the virus load per probe), viable virus on the proboscis probably disappears at the same rates.

II. Two virulent and 3 attenuated strains of myxoma virus produced lesions containing approx. the same amount of virus, and were transmitted with equal efficiency by mosquitoes. The laboratory variant neuromyxoma multiplied poorly in the skin and was seldom transmitted by mosquitoes. The survival of strains in the field is correlated with the length of time for which rabbits with skin lesions are exposed to mosquitoes. Mosquito species differed in their efficiency as vectors. This may be due to differences in the mouthparts. Feeding on an immune rabbit after probing infected skin lesions had no greater effect on the ability of mosquitoes to transmit myxomatosis than a

feed on a normal rabbit. Nine serial passages of the standard strain of virus, each lasting for one week in the rabbit and two weeks in the mosquito, had no effect on its pathogenicity.

FENNER, F. & MCINTYRE, G. A. (1956). **Infectivity titrations of myxoma virus in the rabbit and the developing chick embryo.**—*J. Hyg., Camb.* **54**, 246-257. [Abst. from authors' summary.] **3490**

Six strains of myxoma virus were titrated on the chorioallantoic membranes of chick embryos and by i/d inoculation into rabbits. No differences in infectivity were found. The chick embryo was less sensitive than the rabbit. There was some variation in rabbit susceptibility and wide variation in egg susceptibility. Pock count in the chick embryo and infectivity in rabbits were proportional to virus dilution.

ROWE, W. P. (1956). **Protective effect of pre-irradiation on lymphocytic choriomeningitis infection in mice.**—*Proc. Soc. exp. Biol., N.Y.* **92**, 194-198. [Author's summary modified.] **3491**

300 r total body irradiation of mice one to 4 days before intracerebral or intraperitoneal infection produced a marked decline in symptoms and mortality. The growth curve of the virus after intracerebral inoculation was identical in irradiated and control mice. After intraperitoneal infection with a viscerotropic strain there was a slightly lower virus titre in the pooled organs of the irradiated mice.

LISSOT, G. (1956). Peste aviaire, variété maladie de Newcastle, à virus faible. [**Form of Newcastle disease caused by a weakened virus.**]—*Bull. Acad. vét. Fr.* **29**, 43-45. Discussion: pp. 45-47. **3492**

Although they are rare, cases of Newcastle disease in the attenuated form do occur in France. L. believes that the infecting virus has been weakened by prolonged passage in fowls. —I. W. JENNINGS.

PAPPARELLA, V. (1956). Osservazioni e ricerche sul virus pseudo-pestoso attenuato Pagnini. [**An attenuated strain of Newcastle disease virus.**]—*Acta med. vet., Napoli.* **2**, 113-130. [English, French, German and Spanish summaries.] **3493**

By alternate passages through duck and chick embryos, Pagnini was able to reduce the virulence of an already attenuated strain of Newcastle disease virus to the point at which it could safely be used for vaccinal purposes.

Vaccine prepared from this virus was found to be harmless and to possess good immunizing powers.—I. W. JENNINGS.

MACPHERSON, L. W. (1956). **Electron-microscope studies of the virus of Newcastle disease.**—*Canad. J. comp. Med.* **20**, 72-78. [French summary.] **3494**

Using the method of virus adsorption on the surface of laked blood cells, 8 strains of Newcastle disease virus from various parts of the world were examined under the electron microscope. There were no appreciable morphological differences among strains. With one strain it was shown that a salt concentration above 2% induced a change in shape of virus particles from spherical to cylindrical. In normal preparations the average particle size was 192.1 m μ . Phage-like and filamentous forms as described in other literature [*V.B.* **17**, 1983; **19**, 1828] were never observed.—A. S. GREIG.

JOHNSON, E. P. (1956). **The results from various methods of administering B₁ Newcastle disease vaccines.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 329-330. Discussion: pp. 330-332. **3495**

The "B₁" virus has low virulence and confers substantial immunity when a drop of the vaccine is instilled intranasally, which is considered the method of choice, though the time factor is a major consideration when large numbers of birds are to be immunized. Other effective methods include nebulization, atomization and administration of the virus in the drinking water.—T.E.G.R.

FABRICANT, J. (1956). **The present status of killed vaccines in the control of Newcastle disease.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 326-329. Discussion: pp. 330-332. **3496**

Killed vaccines produce some immunity but have certain limitations.—T.E.G.R.

VAN ROEKEL, H. (1956). **An evaluation of Newcastle disease wing-web vaccine.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 324-326. Discussion: pp. 330-332. **3497**

The vaccine is stable and retains its potency if stored at 5°C. or lower. It is not bulky, is easily reconstituted and vaccinated birds do not become carriers. Post vaccination reactions vary with the dose and, to a greater extent, with the virulence of the vaccine and do not constitute a measure of the immunity conferred. This method is not considered practical for large scale immunization owing to

the expenditure of time and labour involved as the birds have to be vaccinated individually. —T.E.G.R.

MARKHAM, F. S., SYLSTRA, A. W., HAMMAR, A. H. & GINGHER, P. (1956). **A flock history after immunization with a combination Newcastle disease-infectious bronchitis dust vaccine.**—*Poult. Sci.* **35**, 390-397. [Authors' summary modified.] **3498**

A commercial laying flock which was vaccinated at 29 days of age with a combined dust vaccine was kept under serological observation for a year. The birds were protected against Newcastle disease and infectious bronchitis for at least 6 months and possibly for a year. There may be a physiological increase in antibody production associated with maximum egg production.

REAGAN, R. L., CHANG, S. C., YANCEY, F. S. & BRUECKNER, A. L. (1956). **Isolation of Newcastle disease virus from man with confirmation by electron microscopy.**—*J. Amer. vet. med. Ass.* **129**, 79-80. [Authors' summary modified.] **3499**

A case of conjunctivitis in man associated with the virus of Newcastle disease was described. The virus was demonstrated in blood and conjunctival washings by inoculation into the brains of hamsters and embryonated hens' eggs. It was confirmed to be Newcastle disease virus by neutralizing tests in hamsters and embryonated eggs. Electron micrographs revealed virus particles in, on and around erythrocytes collected on the day of eye infection.

CRAWLEY, J. F. (1956). **Present status of infectious bronchitis immunization.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 343-349. Discussion: pp. 349-350. **3500**

The development, advantages and methods of administration of avian infectious bronchitis vaccine are reviewed. It is considered that the immunizing power diminishes with attenuation of the strain. The role of pleuropneumonia-like organisms as secondary invaders is discussed. It is considered that effective control of the disease could be achieved by immunization of laying and breeding stock.—T.E.G.R.

WILLS, F. K. & DELAPLANE, J. P. (1956). **Transmission and therapy studies on an agent which produces arthritis in chickens.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 350-357. [Authors' summary copied verbatim.] **3501**

A total of 1,470 chicks were hatched from

four flocks exposed to the agent causing infectious synovitis. One of the offspring was found affected when 21 days old. Possible transmission of the agent through the egg is suggested. Large dosages of chlortetracycline and oxytetracycline reduced mortality and delayed the occurrence of synovitis following experimental infection of chickens. Under the conditions of the experiments, the treatments appeared to have little practical value. Further studies are indicated.

ASPLIN, F. D. (1956). **The production of ducklings resistant to virus hepatitis.**—*Vet. Rec.* **68**, 412-413. [Authors' summary modified.] **3502**

Ducklings of non-immunized parents were very susceptible to hepatitis virus for the first 2-3 weeks of age; thereafter they rapidly became resistant. Ducklings of parents which had been inoculated with duck hepatitis virus were resistant to challenge with virulent virus during the susceptible age period.

PULSFORD, M. F., CHAMBERLAIN, H. V. & TOPHAM, J. (1956). **A preliminary note on infectious laryngotracheitis vaccination with virus of low virulence.**—*Aust. vet. J.* **32**, 138-141. [Authors' summary copied verbatim.] **3503**

A strain of infectious laryngotracheitis of low virulence is described and its value as a vaccine outlined. The vaccine has been tested in a small controlled experiment and in two field outbreaks with apparent success. This strain differs from previously described strains of low virulence in that it has a greater pathogenicity for cloacal than tracheal mucosa. The distribution of vaccination reactions is discussed in the light of previous epidemiological findings.

MYKYTOWYCZ, R., DANE, D. S. & BEECH, M. (1955). **Ornithosis in the petrel, *Puffinus tenuirostris* (Temminck).**—*Aust. J. exp. Biol. med. Sci.* **33**, 629-636. **3504**

Two strains of psittacosis virus were isolated from the short-tailed shearwater, popularly known as the mutton bird, one from a juvenile and the other from an adult. Serological tests suggested a widespread incidence in these birds, and it was assumed that young birds acquired the infection early in life from their parents. In the late spring months, during the second half of the annual southern migration, heavy mortality occurs in immature adult birds. Psittacosis virus was isolated from one

such bird, and it is suggested that, under the stressing conditions of migration, activation of latent infection may be a contributing factor in the natural control of the mutton bird population.—R. BARRY.

BENEDICT, A. A., O'BRIEN, E. & MCFARLAND, C. (1956). **Antigenic studies on the psittacosis-lymphogranuloma venereum group of viruses. III. Detection of ornithosis hypersensitivity in experimentally infected chickens.**—*Amer. J. vet. Res.* **17**, 543-546. [Authors' summary modified.] **3505**

The use of a soluble antigen for the detection of allergy in fowls infected with psittacosis was described. When tested in fowls infected for 3-4 weeks, this antigen was more active as a skin test reagent than allantoic fluid viral suspensions and a commercial complement-fixing antigen. Positive intradermal reactions were given by 131 of 142 experimentally infected fowls. Out of 84 apparently healthy fowls, 3 gave positive reactions. Repeated i/d inoculations in normal fowls stimulated the production of positive indirect complement-fixing titres but did not lead to a state of cutaneous hypersensitivity.

COCHRAN, K. W. & FRANCIS, T., JR. (1956). **Antiviral action of helenine on experimental poliomyelitis.**—*Proc. Soc. exp. Biol., N.Y.* **92**, 230-232. [Authors' summary modified.] **3506**

Helenine, an antiviral agent derived from *Penicillium funiculosum*, reduced morbidity from 100% to 18% and had marked prophylactic activity in cynomolgus monkeys infected with poliomyelitis.

GARABEDIAN, G. A. & DJANIAN, A. Y. (1956). **Q fever in Lebanon (Middle East). II. Attempts to demonstrate by animal inoculations the presence of *C. burneti* in milk samples.**—*Amer. J. Hyg.* **63**, 313-318. [Authors' summary modified.] **3507**

Pooled samples of milk from cows, sheep and goats in various localities of the Lebanon and from pasteurization plants were tested for the presence of *Rickettsia burneti* by inoculation of g. pigs and subsequent testing of their sera for the presence of complement-fixing antibodies. One of 6 pooled samples from cows and one of 6 from goats gave rise to high-titre c. f. antibodies. Furthermore, of 5 raw milk samples collected from pasteurization plants one gave positive results. The epidemiology of Q fever in the Lebanon was discussed briefly.

IMMUNITY

TALMAGE, D. W., FRETER, G. G. & TALIAFERRO, W. H. (1956). **Two antibodies of related specificity but different hemolytic efficiency separated by centrifugation.**—*J. infect. Dis.* **98**, 300-305. [Abst. from authors' summary.] **3508**

Analysis of the upper, middle and lower fractions of 6 Forssman and 2 isophile antisera, after centrifugation for 200 min. at $105,000 \times g$, revealed, from the upper layer downwards, a progressive increase in the ratio of haemolytic to combining capacity. The average increase in ratio was tenfold, indicating at least 2 antibodies of different sedimentation rate and haemolytic efficiency. The implication of these results for the unitarian concept of antibodies is discussed.

BERGLUND, K. & FAGRAEUS, A. (1956). **A biological factor inhibiting the effect of cortisone on antibody formation.**—*Nature, Lond.* **177**, 233-234. **3509**

The depression of the antibody response in adult white rats by the i/m injection of cortisone could be eliminated and the mean antibody titre enhanced if the rats were injected i/p with intact spleen or thymus cells two hours after the antigen injection. The authors suggest that the spleen and thymus cells contain or produce a factor, or have a cellular function, essential for some initial cortisone-sensitive phase of the antibody production process.

—A. E. PIERCE.

KERR, W. R. (1956). **Active immunity experiments in very young calves.**—*Vet. Rec.* **68**, 476-477. **3510**

Single or repeated injection of one bacterial antigen complex (*Brucella abortus* vaccine, Strain 19 alcohol-precipitated antigen, or *Salmonella dublin* heat-killed suspension) into week-old calves gave rise to no demonstrable antibodies, though 2 calves, 4 months old showed a marked response to Strain 19 and *S. dublin* antigens. When the young calves reached 4 months of age and were injected again with the same antigen, a high agglutination titre was obtained, the immediate response being noted as early as the third day. It is suggested that the early injection, though not producing agglutinins, created a tissue change so that a "recall response" took place.

—W. E. PARISH.

IVANOV, M. M., NIKOFOROVA, N. M. & BAZVILEV, N. M. (1956). [Isolation of living organisms from hyperimmune sera.]—*Proc. Lenin Acad. agric. Sci.* **21**, No. 4. pp. 42-44. [In Russian.] **3511**

Claims to have isolated living organisms from anthrax antiserum and lamb dysentery antiserum were made by Koselov & Borisovich [*V.B.* **24**, 2182] and Kagan & Kolesovoi (1955). The present authors examined at the State Control Institute for Veterinary Preparations many batches of these antisera and found that they were all sterile.—R.M.

GOODWIN, R. F. W., HEARD, D. H., HAYWARD, H. G. & ROBERTS, G. F. (1956). **Haemolytic disease of the newborn piglet.**—*J. Hyg., Camb.* **54**, 153-171. [Authors' summary modified.] **3512**

Four litters of new-born piglets with haemolytic disease were observed. Pallor and mild jaundice were evident in some but activity was not reduced except in the terminal stages of fatal cases. In mild cases there were no clinical symptoms, and the disease could be detected only by a fall in haemoglobin level or sensitization of the red cells. Both agglutinating and incomplete antibodies were found; in one case antibody was present only $3\frac{1}{2}$ hours after suckling started, and by 4 hours the titre of free antibody was 1:256. The antibodies did not pass the placenta. In severe cases a rapid fall in Hb, interrupted by a sharp, transient rise, and accompanied by reticulocytosis and erythroblastæmia, was characteristic of the first 24 hours; this was followed in some cases by a prolonged low level of Hb before recovery started. In some of those that died, severe and widespread focal necrosis of the liver, together with degeneration and necrosis of the kidney, were marked. Pigment deposits and erythrophagocytosis were common in nearly all organs, but abnormal extramedullary erythropoiesis was not observed.

KIND, L. S. & GALLEMORE, J. I. (1956). **Pulmonary vascular changes in the mouse during anaphylactic shock.**—*Proc. Soc. exp. Biol., N.Y.* **92**, 345-347. [Authors' summary copied verbatim.] **3513**

Arteriolar constriction, clumping of red cells, and embolization have been noted in the pulmonary circulation of mice during anaphylactic shock.

See also absts. 3350-3352 & 3357-3358 (TB); 3361 (Johne's disease); 3371 (listeriosis); 3384 (Salmonella antigens for poultry); 3386-3396 (brucellosis); 3398-3405 (leptospirosis); 3412 (botulism); 3435 (anaplasmosis); 3439 (toxoplasmosis); 3443-3447 (F. & M. disease); 3450-3453 (rabies); 3454 (pox viruses); 3455 (sheep pox); 3456-3458 (pigeon and fowl pox); 3465-3466 (E.I.A.); 3477-3478 (swine fever); 3482 (distemper); 3483-2484 (canine virus hepatitis); 3486 (vaccination against mink enteritis with feline panleucopenia vaccine); 3492-3499 (Newcastle disease); 3503 (infectious laryngotracheitis); 3505 (psittacosis).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

CROSS, R. F. & FOLGER, G. C. (1956). The use of malathion on cats and birds.—*J. Amer. vet. med. Ass.* **129**, 65-66. [Authors' summary modified.] **3514**

Malathion was non-toxic for cats as a 0.2% dip, as a flea-powder or when given orally in a dose of 2 g. of 25% malathion. Poisoning was produced in a 4-month-old kitten by dipping it in a 50% emulsion. Malathion in the nesting boxes was non-toxic for parakeets and cockateels, and controlled feather mites.

SPINDLER, L. A., BECKLUND, W. S. & PETERSON, H. O. (1956). Cattle grub control in central Washington.—*Proc. 59th Ann. Meet. U.S. live Stk sanit. Ass.* 1955, 226-236. **3515**

A description of a field operation to control *Hypoderma* larvae in cattle. Treatment of infested cattle from 1950-52 was carried out on a voluntary basis, the aim being 3 treatments during the season, by spraying, hand washing, dusting or dipping with rotenone. Hand washing gave 100% kill, "jetting" under high pressure 95-100% and spraying with coarse droplets at 200-300 lb. pressure only 40-60%. In 1952 after 2 years' control about 2,000 cattle were examined. (1) On farms with adequate control, 2.6% were infested with an average of 1.3 larvae per beast. (2) Farms with inadequate control (by spraying): 35.3% infested with an av. of 5.5 larvae and (3) No control: 71.96% infested with an av. of 9.9 larvae. The authors conclude that supervision by trained personnel is necessary to obtain optimal results.

—W. E. PARISH.

GOODWIN, W. J. (1956). Toxicity of Diazinon vapors to horn flies.—*J. econ. Ent.* **49**, 406-407. [Author's summary modified.] **3516**

The numbers of *Siphona irritans* were considerably reduced in milking byres sprayed with a 0.5% suspension of Diazinon wettable powder. This fly remains on the host almost constantly, therefore a fumigating effect was indicated. Tests revealed that the vapours of Diazinon sprayed as a 0.5% wettable powder suspension are highly toxic to the flies; 21 days after application, exposure to the vapours for 3 hours killed 100% in laboratory conditions.

ANON. (1956). Cattle tick.—*J. Aust. Inst. agric. Sci.* **22**, 75. **3517**

A note on an official eradication campaign recently started in New South Wales, entailing fortnightly dipping of all musterable stock in a

D.D.T. suspension and shooting of unmusterable stock. The estimated cost is £3 million.

PIERCE, A. E. & PIERCE, M. H. (1956). A note on the cultivation of *Boophilus microplus* (Canestrini, 1887). (Ixodidae: Acarina) on the embryonated hen egg.—*Aust. vet. J.* **32**, 144-146. [Authors' summary modified.] **3518**

B. microplus was cultivated from the larval to the nymphal stage on the air cell membrane of the chick embryo. Young adults, moulted *in vitro*, also attached themselves to it for short periods. No intermediate stages of *Babesia*, *Anaplasma* or *Theileria* were identified in smears of the internal organs of larvae, nymphs and adult ticks examined, nor was there any evidence of transmission of these protozoa to the chick embryo. However, organisms of a rickettsial nature were seen in preparations of ova, embryonated eggs and larvae.

BORGES FERREIRA, L. D. B. (1956). Um meio para a montagem de artrópodos. [A medium for rendering arthropods translucent for microscopic examination.] — *Rev. Cienc. vet., Lisboa.* **51**, 24-25. [French summary.] **3519**

To 10 g. distilled water are added 3 g. glacial acetic acid and 74 g. chloral hydrate, the mixture being shaken until dissolved; 5 g. of 98% glucose syrup and 8 g. powdered colophon resin are added in turn and after being thoroughly shaken the mixture is left at 60°C. for one hour. The medium is unsuitable for thick insects; but specimens of *Megninia*, *Lipeurus*, *Menopon*, *Goniocotes*, *Goniodes* and *Columbicola* mounted each with a single drop of medium some four years earlier, were still perfectly identifiable. Air bubbles do not form in the preparations as with mastic resin.—F.E.W.

FOGGIE, A. (1956). The effect of tick-borne fever on the resistance of lambs to staphylococci.—*J. comp. Path.* **66**, 278-285. [Author's conclusions modified.] **3520**

Five out of six lambs infected i/v with staphylococci during the neutropenic phase of an attack of tick-borne fever developed pyaemia. Pyaemia did not develop in 3 lambs infected with staphylococci only, nor in 3 lambs infected simultaneously with staphylococci and tick-borne fever; one of the latter group died from acute *Pasteurella* infection. The relationship between tick-borne fever and tick pyaemia is discussed.

PARASITES IN RELATION TO DISEASE [HELMINTHS]

KLESOV, M. D. & POPOVA, Z. G. (1956). [Prophylactic measures against *Dicrocoelium lanceatum* infestation in sheep.]—*Veterinariya, Moscow*. 33, No. 6, pp. 36-39. [In Russian.] 3521

The two measures discussed were the use of fowls to destroy the snail vectors of *D. lanceatum*, and the rearing of lambs on ley pastures. A series of experiments with snails was reported: in one of them *Fruticola fruticum* and *Cepaea vindobonensis* were placed on pasture at the rate of 90 per 4 sq. meters. Five days after fowls had been introduced on to the pasture, 89% of the snails had disappeared; after 31 days 4 out of 6 plots were free from snails. On 37 hectares of pasture on an affected farm, 1,000 fowls were introduced on the 9th May; on the 18th May a flock of 180 sheep, including 70 lambs, was also kept on the pasture. *D. lanceatum* infestation was absent from the lambs during the period May to July, compared with 50% infestation in lambs on pasture not stocked with fowls. In September the percentage of infested lambs in each group was 6.3% and 80%, respectively.—R.M.

CHOQUETTE, L. P. E. (1956). Observations on experimental infection of dogs with *Echinococcus*.—*Canad. J. Zool.* 34, 190-192. 3522

During experimental infections, studies were made on the adult worm with reference to longevity, pathogenicity, and the physical aspects of the immature, mature and senile segments eliminated.—R. V. L. WALKER.

GRABER, M. & RECEVEUR, P. (1956). Parasitisme interne du mouton en zone sahélienne. Oesophagostomose nodulaire en particulier. [Internal parasites of sheep in French Equatorial Africa, particularly *Oesophagostomum* infestation.]—*Rev. Elev.* 9, 5-20. [English and Spanish summaries.] 3523

In western Chad, Anoplocephalidae constitute the main danger to young sheep, with an incidence of 57%—often associated with nematodes, which rank second in importance. In the eastern part of the territory *Oesophagostomum* affects 85.6% of the sheep, with a seasonal incidence between October and January, the hot and humid season. The life cycle of *Oes. columbianum* is described. Diagnosis of *Oesophagostomum* infestation is difficult. There are no characteristic clinical manifestations; examination of the faeces is of little value during the immature larval stage (when losses are heaviest) but it is useful when the mature stage has been reached and egg laying has started

(in March). Prognosis is bad; treatment is not satisfactory and prophylaxis, under present conditions, is difficult.—T.E.G.R.

JOHNSTON, E. F. & MACPHERSON, L. W. (1956). An outbreak of acute parasitic gastro-enteritis in a herd of cattle in the Ottawa Valley.—*Canad. J. comp. Med.* 20, 203-205. [French summary.] 3524

The severity of the infection produced by infestation with *Haemonchus contortus* and *Ostertagia ostertagi* resulted in serious diarrhoea and anaemia causing a heavy economic loss.

—R. V. L. WALKER.

WHITLOCK, H. V. (1956). An improved method for the culture of nematode larvae in sheep faeces.—*Aust. vet. J.* 32, 141-143. [Author's summary copied verbatim.] 3525

A method of culturing sheep faeces for the recovery of infective larvae is described. It utilizes the migratory habits of the infective larvae to trap them in water surrounding an inner tube in which the faeces are cultured. Regulation of the moisture content of the culture is achieved by the saturated atmosphere in the jar surrounding the culture tube.

CORCORAN, J. F. (1956). A method for the control of hoose (*Dictyocaulus viviparus*).—*Irish vet. J.* 10, 118. 3526

A short clinical communication advising grass-harrowing of pasture and grazing by adult cattle to destroy the third stage infective larvae of *D. viviparus* on farms where hoose is a problem.—W. E. PARISH.

ROSE, J. H. (1956). The bionomics of the free-living larvae of *Dictyocaulus viviparus*.—*J. comp. Path.* 66, 228-240. [Author's conclusions modified.] 3527

Experiments with infected faeces placed on rapidly growing herbage in boxes showed that larvae survived equally well on grass and on clover. Whilst only a small percentage of larvae moved from the faecal pats on to the herbage, more did so from wet pats than from those which dried out. Survival, which was less in summer than in winter, appeared to be related to susceptibility to dryness. In the laboratory, survival was less in dry than in wet faeces, and no larvae were alive after 24 hours' exposure to partial desiccation on slides. Longevity on wet faeces increased as the temperature fell. A few larvae survived for 12 months in water at 3° to 5° C. A few survived the winter, resisting temperatures below 0° C. both out of

doors and in the laboratory. The rate of development diminished with the temperature. At 5°C. third stage larvae were observed after 26 days, but at 25°C. they were observed after only 3 days. Out of doors in January they were observed after 4 weeks.

MICHEL, J. F. (1956). **Studies on host resistance to *Dictyocaulus* infection. II. Re-infection experiments with *D. filaria* in sheep.**—*J. comp. Path.* **66**, 241-248. [Author's conclusions modified.] **3528**

Larvae of *D. filaria* failed to become established in sheep which had recovered from a previous infection. This was shown to be due to the previous infection and not to age. Evidence is presented which suggests that the larvae failed to reach the lungs.

POYNTER, D. (1956). **Piperazine-1-carbodi-thioic acid as an anthelmintic against *Parascaris* in horses.**—*Vet. Rec.* **68**, 429-431. **3529**

The drug was administered to 12 horses in a dose of 100 mg/kg. body wt. After 4 days eggs of *Ascaris equorum* were no longer found in the faeces, and mature and immature ascarids were passed.—M.G.G.

I. DOL'NIKOV, Y. Y. (1956). [Herd treatment of *Ascaris* in pigs with sodium fluosilicate.]—*Veterinariya, Moscow*. **33**, No. 5. pp. 38-40. [In Russian.] **3530**

II. AKRAMOVSKI, M. N., KATASHEVA, Y. E. & VOLKOVA, A. D. (1956). [Sodium fluosilicate in *Parascaris* infestation of horses.]—*Ibid.* No. 6. pp. 41-43. [In Russian.] **3531**

I. Sodium fluosilicate was as effective when given mixed with the food as when pigs were individually dosed. Two methods were equally effective: two-day treatment, consisting of 6 medicated feeds containing a total average dose per pig of 3 g. (pigs weighing 20-40 kg.) or 4.2 g. (pigs over 40 kg.) of sodium fluosilicate; or one-day treatment, consisting of 3 medicated feeds containing, respectively, 0.6, 0.6 and 1 g. per pig per feed for those weighing less than 40 kg., or 0.7, 0.7 and 1.5 g. for those weighing more than 40 kg.

II. A non-toxic and effective dosage of sodium fluosilicate for horses was 0.05-0.08 g./kg. body wt. It was given mixed with moistened oatmeal after 12 hours' starvation.

—R.M.

ENZIE, F. D. & COLGLAZIER, M. L. (1956). **Present-day trends in anthelmintics for swine.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 153-159. [Authors' summary modified.] **3532**

A consideration of anthelmintics for pigs,

namely oil of chenopodium, phenothiazine, sodium fluoride, cadmium oxide, cadmium anthranilate, cadmium fumarate, piperazine adipate, a piperazine-carbon disulphide complex, and piperazine hydrate, indicates a trend towards chemicals which have a wider range of action, are better tolerated by parasitized animals and are least dangerous to man. Cadmium compounds, although more palatable than sodium fluoride and less irritating to the gastro-intestinal mucosae, remain in the tissues of treated pigs. Piperazine compounds, on the other hand, exhibit a wide range of anthelmintic action, are well tolerated by pigs, and apparently present no risk to the consumer. Chemicals of the latter type warrant major consideration in future work on the control of parasitism in pigs and other livestock.

HORTON-SMITH, C. & LONG, P. L. (1956). **The anthelmintic effect of three piperazine derivatives on *Ascaridia galli* (Schrank 1788).**—*Poult. Sci.* **35**, 606-614. [Abst. from authors' summary.] **3533**

Piperazine adipate, piperazine citrate and an equimolar complex of piperazine and carbon disulphide eliminated adult *Ascaridia* from fowls when administered in single doses varying from 100 to 500 mg./kg. body wt. according to the compound used. They also removed many larvae, but to what extent tissue phase larvae were removed was not determined.

KRASTIN, N. I. & PUTILINA, V. P. (1956). [Methods for the control of *Thelazia* infestation in cattle.]—*Veterinariya, Moscow*. **33**, No. 6. pp. 40-41. [In Russian.] **3534**

In the Far-Eastern region of the U.S.S.R. *Thelazia* infestation of the eyes of cattle is caused by *T. rhodesi*, *gulosa* and *skrjabini*. For killing the worms each eye was irrigated with 0.5% aqueous soln. of lysol. Treatment was performed twice in one day and repeated twice the next day. Lysol was preferred to the officially recommended 1:2,000 aqueous soln. of iodine.

—R.M.

SHOHO, C. (1956). **The treatment of cerebro-spinal nematodiasis by 1-diethylcarbamy-4-methylpiperazine dihydrogen citrate.**—*Ceylon vet. J.* **4**, 6-10. **3535**

A further general paper on the treatment of this condition, caused by *Setaria*. A single dose of the therapeutic agent is said to inactivate migrating worms for at least three weeks, and functional recovery can occur in the parasitized animal even after direct mechanical injury to the c.n.s. Experiments on rabbits are described

in general terms, in which the medulla oblongata was damaged by a fine needle, and in which recovery followed nervous symptoms lasting 1-5 days.—W. E. PARISH.

PERERA, S. J. E. (1956). **Preliminary survey of the incidence of filariasis in dogs in Kandy district.**—*Ceylon vet. J.* 4, 22-24. [Author's summary modified.] 3536

In a preliminary survey of filariasis of dogs in Ceylon 29 out of 59 animals had microfilariae in the blood. Three of them died and adult worms were recovered from the subcutaneous tissue. These await identification but are probably *Dirofilaria repens*. Three cases examined both during the day and at night did not show

any periodicity of the microfilariae. Pathogenicity appears to be low.

I. SHULTS, R. S. & BOEV, S. N. (1954). [Problems of the total eradication of helminths.]—*Trud. Inst. Vet., Alma-Ata*, 6, 427-435. [In Russian.] 3537

II. SHULTS, R. S. & BOEV, S. N. (1954). [Ways of realizing the eradication of helminths.]—*Ibid.* 6, 436-467. [In Russian.] 3538

I & II. A detailed discussion of problems and methods of totally eradicating helminth parasites of all species of farm animals in the U.S.S.R. The scheme does not appear to be in operation yet.—R.M.

See also absts. 3634 (FAO/WHO Expert Committee on Meat Hygiene); 3650 (report, West of Scotland Agricultural College); 3656 (report, Sierra Leone).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

WIJEWANTA, E. A. (1956). **Chromaffinoma of the adrenal medulla in a bovine.**—*Ceylon vet. J.* 4, 18-21. [Author's summary modified.] 3539

A rare tumour in the adrenal medulla of a bull is described. The situation, characteristics of growth and chrome reaction showed it to be a chromaffinoma.

COTCHIN, E. (1956). **Further examples of spontaneous neoplasms in the domestic cat.**—*Brit. vet. J.* 112, 263-272. [Author's summary copied verbatim.] 3540

An account is given of the age, sex and site incidence of a series of 200 neoplasms from cats. The tumours of the different systems are briefly considered.

PLUMMER, P. J. G. (1956). **A survey of six hundred and thirty six tumours from domesticated animals.**—*Canad. J. comp. Med.* 20, 239-251. 3541

Classification of the 636 tumours examined was carried out; 487 were from cattle, 28 pigs, 6 sheep, 14 horses, 51 fowls, 83 dogs and 7 cats. Of the bovine specimens, 96 were squamous-cell carcinomata involving the orbital area; the fact that 80 of the orbital carcinomata were found in cattle slaughtered in the Calgary area appeared to be significant.—R. V. L. WALKER.

CATELLANI, G. (1956). Sul comportamento della fosfatasi alcalina nelle displasie e nei tumori della cagna. [Alkaline phosphatase in neoplasms of the bitch.]—*Acta. med. vet.*,

Napoli, 2, 131-152. [English, French and German summaries.] 3542

In the bitch, the blood phosphatase level was found to be raised in cases of malignant mammary neoplasia, but not in simple fibrocystic adenoma. The histochemical reaction for phosphatase was strongly positive in the neoplastic tissues, except in sarcomata. Malignant mammary neoplasia, it seems, does not necessarily involve loss in phosphatase activity.

—I. W. JENNINGS.

RIGDON, R. H. (1956). **Trauma and cancer. An experimental study in the White Pekin duck.**—*Arch. Path.* 61, 443-449. [Author's summary modified.] 3543

Haemangiomas, papillomas and fibromas developed in the skin of the body wall of ducks after local applications of a 0.25% solution of methylcholanthrene in acetone. The number of tumours was greater in ducks with feathers plucked than in birds similarly treated but with feathers not plucked. Papillomas and haemangiomas also developed on the webs of the feet and beneath the lower bill—areas devoid of feather follicles and sebaceous glands.

SMITH, E. W. & ATKINSON, W. B. (1956). **Simple procedure for identification and rapid counting of mast cells in tissue sections.**—*Science*, 123, 941-942. 3544

Thin tissue slices are fixed in alcoholic formalin. Paraffin sections are stained in toluidine blue solution of low pH, so that the only materials deeply stained are mast cell granules

and cartilage matrix. The tissues are lightly counterstained with eosin. The mast cells are coloured deep blue against a pale pink back-

ground, and cell counts may be rapidly made under the low power objective.

—E. COTCHIN.

NUTRITIONAL AND METABOLIC DISORDERS

TUCKER, J. O., GLENN, M. W. & ROBERTSTAD, G. W. (1956). **Effects of dried preserved rumen inoculum on the rumen micro-organisms of lambs.**—*Amer. J. vet. Res.* **17**, 498-502. **3545**

Dried, preserved rumen contents failed to stimulate the rumen flora of lambs, in which the flora had been suppressed by the oral administration of large doses of chloramphenicol (2-8 g. daily for 1-3 days).—R.M.

WARNER, A. C. I. (1956). **Proteolysis by rumen micro-organisms.**—*J. gen. Microbiol.* **14**, 749-762. [Author's summary modified.] **3546**

Toluene-treated washed suspensions of rumen bacteria break down proteins largely to amino-acids; in the absence of toluene bacterial deaminases are active. Unlike the deaminases, the presence of proteases does not depend, to any great extent, on readily attacked protein in the diet. Rumen protozoa are also proteolytic, and ammonia appears to be the end product of their nitrogen metabolism. Toluene has a greater effect on the ammonia production of bacteria than on that of protozoa. Much of the ammonia production in the absence of substrate appears to be due to endogenous metabolism of the protozoa. Extracts of acetone powders, and extracts prepared by simple freezing and thawing of protozoa, contain active proteases.

In an artificial rumen, when digestion was complete, about half the N and C of added casein was recovered as ammonia and volatile fatty acids respectively. Most of the remainder could not be accounted for analytically, and was presumed to be used for the microbial growth which had occurred. When starch or other polysaccharides were added as well as casein, the production of ammonia fell. This was not due to any effect on proteolysis or deamination, and was presumed to be due to the greater use for microbial growth of a breakdown product of casein.

WARNER, A. C. I. (1956). **Criteria for establishing the validity of *in vitro* studies with rumen micro-organisms in so-called artificial rumen systems.**—*J. gen. Microbiol.* **14**, 733-748. [Author's summary modified.] **3547**

The criteria include the maintenance of

numbers and normal appearance of the bacteria, selenomonads and protozoa, the maintenance of normal rates of digestion of cellulose, starch and protein, and of normal interactions between these, and the quantitative prediction of *in vivo* results. An artificial rumen was constructed. It consisted of a cellophane sac which contained rumen liquor and substrate and dialysed against a complex mineral solution similar to rumen liquor, the whole being incubated at 39°C. in an atmosphere of nitrogen and carbon dioxide. This system met the criteria with reasonable success for periods of about 8 hours; over longer periods an increasing failure to meet the biological criteria was seen. For the microbial population to remain normal it was necessary to use as substrate only substances similar to those fed to the animal from which the rumen liquor inoculum was taken.

PATCHELL, M. R. (1956). **The effect of aureomycin supplement on the growth and health of young calves.**—*N.Z. J. Sci. Tech. Sect. A.* **38**, 23-26. [Abst. from author's summary.] **3548**

Eight pairs of monozygous twin calves were used. From two to ten weeks of age one of each pair received daily 100 mg. of pure aureomycin. The treated calves gained an average of 4.9 lb. over the controls during treatment, but thereafter the controls made the greater gains in weight. This effect persisted up to 40 weeks of age. The total incidence of scours was low.

BOSSHARDT, D. K., HUFF, J. W. & BARNES, R. H. (1956). **Effect of bromine on chick growth.**—*Proc. Soc. exp. Biol., N.Y.* **92**, 219-221. [Authors' summary modified.] **3549**

A growth response to bromine as trace element in a semi-synthetic diet was observed in chicks. The findings were discussed.

SHORT, B. F. (1955). **Developmental modification of fleece structure by adverse maternal nutrition.**—*Aust. J. agric. Res.* **6**, 863-872. [Author's summary modified.] **3550**

Adverse maternal nutrition reduced the body weight and secondary: primary (S/P) fibre ratio of lambs at birth but had little effect on the S/P follicle ratio. Post-partum feeding of ewes was *ad libitum* but the progeny of ewes which had a restricted nutritional régime during

pregnancy initially grew more slowly, presumably owing to a reduced milk production of the dams. At 200 days of age, offspring of ewes well fed and poorly fed during gestation had attained the same mean body weights and produced the same amount of clean wool per head and per unit area of skin. The lambs with fewer mature follicles (offspring of poorly fed ewes) grew fibres both longer and thicker than lambs with high fibre densities.

LINK, R. P., SMITH, J. C. & MORRILL, C. C. (1956). **Toxicity studies on captan-treated corn in pigs and chickens.** — *J. Amer. vet. med. Ass.* **128**, 614-616. 3551

Good weight gains were made by pigs and chicks receiving maize treated with N-trichloromethylthiotetrahydrophthalimide. At slaughter no pathological changes were observed. Chemical analysis of the pigs' tissues did not reveal the agent.—M.G.G.

ABAKUMOV, G. V. (1956). [**Lumbar procaine nerve block as a method of treating colic in horses.**]—*Veterinariya, Moscow*. **33**, No. 4. pp. 55-59. [In Russian.] 3552

Twenty-eight cases of colic were treated by anaesthetizing the splanchnic nerves and sympathetic trunks by procaine, introduced by a needle inserted between the last rib and the transverse process of the 1st lumbar vertebra on the left side, and between the 17th and 18th ribs (8-12 cm. from the dorsal midline) on the right side. A 0.25% soln. of procaine was used at a dosage of 1 ml. per kg. body wt. The method was essentially similar to that described by Mosin [*V.B.* **26**, 2715]. The cases included spasmodic colic, intestinal meteorism, acute dilatation of the stomach, acute catarrhal gastroenteritis, and intestinal impaction. The lack of response of mechanical obstructions to this treatment was of value in differential diagnosis.

—R.M.

MADSEN, K. F. (1956). En universaltympan. [**A special stomach tube for relieving tympanites in cattle.**] — *Nord. VetMed.* **8**, 446-453. [In Danish, English and German summaries.] 3553

M. described and illustrated an improved stomach tube for the relief of bloat in cattle. It can also be used for obtaining samples of normal rumen contents. It consists of a perforated cylindrical suction member, retractable within another cylinder which is provided with a scraping device, fixed to a galvanized spring; there are air-tight connexions with a tubing system with a three-way stop-cock, and a

vacuum bottle; either a powerful hand pump or a milking machine pulsator can be used.

—F.E.W.

MARR, T. G., SHARMAN, G. A. M. & BLAXTER, K. L. (1956). **A note on the occurrence of muscular dystrophy in hogs in the north of Scotland.**—*Vet. Rec.* **68**, 408-410. [Authors' summary modified.] 3554

Three outbreaks of muscular dystrophy in yearling sheep are described; the condition developed after exertion at the end of 4-5 months of winter feeding mainly on turnips. In one outbreak the disease did not appear in a flock on the same farm which was receiving a concentrate supplement in addition to turnips. Diagnosis was confirmed histologically and biochemically. The lesions were usually calcified. Treatment with alpha tocopheryl acetate hastened recovery, but spontaneous recovery was common.

ASCHKENASY, A., DELMONTE, L. & EYQUEM, A. (1956). Mise en évidence d'une hémolyse anormale dans la carence expérimentale en protéines. [**Abnormal haemolysis in experimental protein deficiency.**] — *C. R. Soc. Biol., Paris*. **150**, 474-476. 3555

Erythrocytes from rats fed a protein-deficient diet were less resistant to the haemolytic action of digitonin than erythrocytes from normal rats.—R.M.

ARATA, D., SVENNEBY, G., WILLIAMS, J. N., JR. & ELVEHJEM, C. A. (1956). **Metabolic factors and the development of fatty livers in partial threonine deficiency.** — *J. biol. Chem.* **219**, 327-333. [Authors' summary modified.] 3556

It was concluded that both defective production of diphosphopyridine nucleotide (DPN) and improper metabolism of endogenous DPN in the liver are major factors in the accumulation of fat in the liver in partial threonine deficiency.

SUNDE, M. L. & BIRD, H. R. (1956). **A critical need of phosphorus for the young pheasant.** — *Poult. Sci.* **35**, 424-430. 3557

Mortality was high when pheasant chicks were fed a diet containing 0.66% phosphorus. After one week on this diet, chicks had distinct leg weakness and were of low weight. After two weeks they showed distinct bending of the tarsometatarsus near the hock joint and of the proximal end of the tibiotarsus. Bone ash values were reduced from a normal of about 52% to 38%. The addition of 0.3% to 0.8% of phosphorus from dicalcium phosphate

resulted in normal growth, normal bone formation and calcification. The pheasant chick would be a good assay animal for the study of phosphorus metabolism and availability.

VAN DER GRIET, J. (1955). Het kopergehalte van lever en bloedserum bij het Fries-Hollandse rund. [The copper content of liver and blood serum in Friesian cattle.]—*Thesis, Utrecht*. pp. 61. [Abst. from English summary.] 3558

Two techniques of liver biopsy for the determination of the copper content in cattle are described. Studies on 9 animals showed that the copper was evenly distributed in the liver and that the amount in the biopsy specimen is representative of the whole organ. Monthly evaluations were made on 7 calves, from birth, and on 3 calves, from the age of 3 months, to the 23rd month. The copper content (of the liver) was low when milk was the main article of diet. It was constant when the animals were stall fed but dropped when they were on pasture. In pregnant cows it decreased from the 5th month onwards; it was low in lactating cows. It is concluded that the copper values are below normal in 75% of adult Friesian cattle.

—T.E.G.R.

BUSH, J. A., MAHONEY, J. P., GUBLER, C. J., CARTWRIGHT, G. E. & WINTROBE, M. M. (1956). Studies on copper metabolism. XXI. The transfer of radiocopper between erythrocytes and plasma. — *J. Lab. clin. Med.* 47, 898-906. [Authors' summary modified.] 3559

Radioactive copper (cupric⁶⁴ acetate) was rapidly taken up by erythrocytes from plasma under both *in vivo* and *in vitro* conditions. Erythrocytes exposed either *in vivo* or *in vitro* to radioactive copper for 15 to 30 min. and then incubated with plasma allowed 30 to 60% of the activity to pass into the plasma. On the other hand, when they were exposed for 24 hours before incubation with plasma, only 5 to 15% of the radioactivity was released. When copper was added to plasma, no significant activity could be detected in ceruloplasmin. The possible metabolic pathways of copper in plasma and erythrocytes were discussed.

BECK, A. B. (1956). The copper content of the liver and blood of some vertebrates.—*Aust. J. Zool.* 4, 1-18. 3560

Determinations were made of the concentration of copper in the liver, and, where possible, in the blood, of many species of vertebrates. Where comparison was possible the results agreed with earlier published data, except

for the g. pig, in which B. reported a wider range of much higher values for liver copper. Variations of copper levels in different species do not follow a phylogenetic pattern.

—C. H. GALLAGHER.

GUBLER, C. J., CARTWRIGHT, G. E. & WINTROBE, M. M. (1956). Hemin chromoproteins in copper-deficient and iron-deficient swine. — *Fed. Proc.* 15, 553. [Only abst. given. Abst. from abst.] 3561

In pigs deficient in iron, the concentration in the tissues of cytochrome *c*, catalase and myoglobin was lowered, but not that of cytochrome oxidase. In pigs deficient in copper, there was an increase in cytochrome *c* content of the heart and a decline in the concentration of myoglobin and cytochrome oxidase; the myoglobin content of the leg muscles was unchanged.—M.G.G.

LANZ, H. (1956). Serumeisengehalt und Eisenresorptionsversuche beim Jungkalb. [Iron content of the serum and iron absorption in young calves.] — *Schweiz. Arch. Tierheilk.* 98, 153-158. [English, French and Italian summaries, English summary modified.] 3562

The iron content of the serum in calves diminishes rapidly after birth and after 14 days reaches a minimum of about 40μg.%. Ferrous gluconate is rapidly absorbed by the intestinal tract; 4 hours after administration the iron content of the serum rises to about 400μg.%, and within 24 hours falls to the original level. Daily administration of ferrous gluconate raised the level to 178μg.%, when the absorption test showed an increase of only 60μg.% revealing almost complete saturation of the serum.

The absorption tests show that the low iron content of the serum of young animals is not physiological but a sign of iron deficiency, due to growth of the animal and insufficient iron in the milk. This may endanger the development and health of young animals.

PARKINSON, J. E. (1956). Plasma iron studies in normal beagle dogs. — *Proc. Soc. exp. Biol., N.Y.* 92, 266-268. [Author's summary modified.] 3563

The level of plasma iron in normal Beagle dogs varies markedly from week to week. A small but significant positive correlation was found between plasma iron and body weight, but not age. No differences were observed between sexes or between normal dogs and dogs fasting for 24 hours. A statistical method for

revealing weekly variation in a dog was presented. Reasons for the variation were discussed.

MCDONALD, I. R. & DENTON, D. A. (1956). Delayed effect of ipsilateral intracarotid infusion of sodium chloride on the composition of the parotid saliva of sodium-depleted sheep.—*Nature, Lond.* **177**, 1035-1036. **3564**

Sodium depletion was caused by the creation of a unilateral parotid fistula. Infusion of sodium chloride into the ipsilateral carotid artery caused an increase in the sodium/potassium ratio of the parotid saliva after 100-150 min., provided that the amount infused was greater than the total sodium excreted in the saliva.—A. SEAMAN.

TAYLOR, S. & POULSON, E. (1956). Long-term iodine deficiency in the rat.—*J. Endocrin.* **13**, 439-444. [Authors' summary modified.] **3565**

Rats on a low-iodine diet for 2 years grew fairly normally, but showed thyroid hyperplasia and colloid depletion. Radioactive iodine was taken up rapidly and equally rapidly discharged. There was wide variation in the size of the thyroids, but great uniformity in the histological pattern and manner of utilizing iodine. Nodules appeared in the thyroid from the 5th month in increasing numbers. They were of a trabecular type, and their iodine uptake was, as a rule, similar to that of the rest of the gland.

ROMIJN, C. (1955). Iodine and thyroid activity in the fowl.—*Acta physiol. pharm. Néerl.* **4**, 121-122. [In English.] **3566**

The effects of an excessive iodine intake on laying hens were studied by feeding seaweed meal containing 10%, 5% and 1% iodine. After 6 months the body weight of fowls in the first 2 groups was about 6% lower than that of controls. That of fowls in the 3rd group, or fowls receiving an equivalent amount of KI, was about 3% higher—hens on the 1% meal had a shorter moulting period followed by a sharp increase in egg production. Marked histological changes were observed in the thyroid glands. The metabolic rate was unchanged. Iodine excretion in the eggs increased to: 903 μ g. in the first group, 536 μ g. in the second and 260 μ g. in the third (and 187 μ g. where the supplement was KI).

—T.E.G.R.

GREEN, R. J. (1956). Micronutrient deficiencies in sheep and cattle and their distribution in Tasmania.—*J. Aust. Inst. agric. Sci.* **22**, 40-44. **3567**

Copper, cobalt and iodine are the only

mineral micronutrients known to be deficient in Tasmanian herbage. Cobalt and copper deficiency symptoms occur in animals, particularly on King and Flinders island. Copper deficiency also extends into the northern midlands.

—D. C. BLOOD.

KHALVASHI, O. S. (1956). [Obstruction of the urinary tract of buffaloes.] — *Veterinariya, Moscow.* **33**, No. 6. pp. 59-61. [In Russian.] **3568**

Urolithiasis occurred in male buffaloes aged 2-6 months, in Azerbaijan, and was attributed to the feeding of too much cottonseed cake or meal. K. described its treatment by urethrotomy.—R.M.

SWINGLE, K. F. & MARSH, H. (1956). Vitamin A deficiency and urolithiasis in range cattle.—*Amer. J. vet. Res.* **17**, 415-424. **3569**

Urolithiasis was as frequent among range cattle receiving adequate amounts of vitamin A as among those on rations low in vitamin A. Comparison of urine from normal weaned calves and from calves on a hay ration deficient in vitamin A failed to reveal any consistent differences in physical properties, sediment, or vitamin A content.—R.M.

CHIUNG PUH LEE, Y., KING, J. T. & VISSCHER, M. B. (1956). Dietary minerals and vitamin E in mouse 'paralysis'.—*Fed. Proc.* **15**, 117. [Only abst. given, Abst. from abst.] **3570**

Trace elements prevented the development of "paralysis" in mice fed a diet low in vitamin E.—M.G.G.

ERSHOFF, B. H., HERNANDEZ, H. J. & MATTHEWS, J. H. (1956). Beneficial effects of alfalfa on the ovarian development of immature rats fed massive doses of alpha-estradiol.—*J. Nutr.* **59**, 147-154. [Authors' summary modified.] **3571**

The ovaries of immature rats given massive doses of alpha-oestradiol remain undeveloped. This can be largely counteracted by the concurrent feeding of dried alfalfa. The protective factor in alfalfa is apparently distinct from any of the known nutrients. Both juice and residue were potent sources of the factor. Commercial alfalfa meal varies markedly in its content of the factor.

BUNNELL, R. H., MATTERSON, L. D., SINGSEN, E. P. & EATON, H. D. (1956). Studies on encephalomalacia in the chick. V. The effect of fish oil and diphenyl-p-phenylenediamine on the vitamin E metabolism of the chick.—

Poult. Sci. **35**, 436-451. [Abst. from authors' summary.] **3572**

Day-old chicks of hens fed a diet low in vitamin E had as little as one tenth of the normal tocopherol content of the liver, as observed in control chicks. The addition of vitamin E to the diet raised the level of tocopherol in the blood plasma and liver. While there was no significant response in growth, the control chicks did show some response. Vitamin E had little effect on the lipid content of the liver.

Diphenyl-p-phenylenediamine (DPPD) had no effect on the amount of tocopherol in the liver or plasma of control chicks, but increased the tocopherol content of the liver in vitamin E-deficient chicks. It also stimulated growth, particularly in deficient chicks, increased the lipid content of the liver and counteracted the effect of fish oil on growth. Fish oil depressed growth and decreased the tocopherol content of the blood plasma and liver and the lipid content of the liver.

It was suggested that DPPD may increase the catabolism of unsaturated fatty acids in the liver, thereby reducing the degree of unsaturation of the tissue lipids. This would explain the protective action of DPPD against encephalomalacia, since only minimal amounts of vitamin E are then necessary for the protection of the tissues.

REID, M. E., MARTIN, M. G. & BRIGGS, G. M. (1956). **Nutritional studies with the guinea pig. IV. Folic acid.**—*J. Nutr.* **59**, 103-119. [Authors' summary modified.] **3573**

Folic acid deficiency can be produced in the young g. pig by exclusion of the vitamin from the diet. The deficiency is characterized by slow growth, gradual loss of appetite and activity, weakness, diarrhoea, profuse salivation in the late stages, fatty infiltration of the liver, adrenal haemorrhages, aplastic condition of the bone marrow, leucopenia and anaemia. The young g. pig has an unusually high requirement for folic acid. From 3 to 6 mg. per kg. of diet is the minimum requirement for growth and a normal red blood cell picture. The requirement is higher for a normal leucocyte count. With 2 mg. or less per kg. of diet, leucocyte production is stimulated by 200 mg. of ascorbic acid per kg. of diet. Ascorbic acid does not spare folic acid. *p*-Aminobenzoic acid is an important supplement in folic acid deficiency.

FISHER, H. & HUDSON, C. B. (1956). **Chick viability and pantothenic acid deficiency in**

the breeding diet—a case report.—*Poult. Sci.* **35**, 487-488. **3574**

High mortality in chicks ceased after oral administration of pantothenic acid. It is suggested that dietary fat increases the need for this vitamin.—M.G.G.

HOVE, E. L. & HERNDON, J. F. (1956). **Vitamin B₆ deficiency in rabbits.**—*Fed. Proc.* **15**, 557. [Only abst. given. Abst. from abst.] **3575**

Young rabbits required more than 20 µg. of pyridoxine daily for maximum growth on a synthetic diet containing 25% casein. The vitamin B₆ content of the liver in deficient rabbits, in rabbits receiving 20 µg. daily and in rabbits receiving 200 µg. was 1.41, 3 and 6.84 µg./g. The symptoms of the deficiency were described. Four rabbits had sudden paralysis of the hind quarters.—M.G.G.

DINNING, J. S. & DAY, P. L. (1956). **Vitamin B₆ and erythropoiesis in the rat.**—*Proc. Soc. exp. Biol., N.Y.* **92**, 115. [Authors' summary modified.] **3576**

Severe vitamin B₆ deficiency in rats increased the r.b.c. count and reduced the haemoglobin, mean cell volume and mean cell haemoglobin. The rats also had lymphopenia and granulocytosis.

JAFFÉ, W. G. (1956). **Requirements of rats for vitamin B₁₂ during growth, reproduction and lactation.**—*J. Nutr.* **59**, 135-146. [Abst. from author's summary.] **3577**

Rats were kept on a diet low in vitamin B₁₂ for 18 generations. Litters showed high mortality, low birth weights, low weaning weights, slow growth and low levels of vitamin B₁₂ in the liver and kidney. Females had their first litters at a later age than controls. Blood characteristics and the glutathione content of the liver were normal. There was no evidence of genetic selection for resistance to vitamin B₁₂ deficiency. The addition of 3 µg. of vitamin B₁₂ per kg. of diet eliminated most of the deficiency symptoms.

HOLMAN, W. I. M. (1956). **The distribution of vitamins within the tissues of common foodstuffs.**—*Nutr. Abstr. Rev.* **26**, 277-304. [Author's summary modified.] **3578**

Available information is summarized on the distribution of vitamins in the tissues of a wide range of foodstuffs. There is evidence in many foods of an uneven distribution of vitamins between the constituent tissues, the vitamins in some cases being confined almost entirely to one particular tissue.

In cereal grains vitamin B₁ is concentrated in two very narrow regions, the scutellum portion of the germ and the aleurone layer, and nicotinic acid is largely confined to the aleurone layer.

In leafy vegetables the concentrations of carotene and vitamin C are usually higher in the leaves than the stalks, and that of carotene is higher in the outer than in the inner leaves. In root vegetables the interior tends to be richer in vitamin C than the periphery.

Among animal tissues liver and kidney are conspicuously rich in vitamins and skeletal muscles relatively poor. The muscles of the pig are exceptionally rich in vitamin B₁.

In many species of animals there are consistent differences between individual muscles, but corresponding muscles from opposite sides of the same carcass have similar concentrations of B vitamins.

In the fowl and the turkey the dark muscles are richer in vitamin B₁ and riboflavin but poorer in nicotinic acid than the light muscles, and in the rabbit the red muscles are richer in vitamin B₁ and riboflavin than the white muscles. In the pig, muscles rich in vitamin B₁ tend to be rich also in nicotinic acid and poor in riboflavin and pantothenic acid.

The lumbar part of the longissimus dorsi muscle in pork loin is slightly richer in vitamin B₁ than the thoracic part, and the ventricular wall of beef and pork heart is slightly richer than the auricular wall.

The vitamins A, D, and B₁ of the hen's egg are confined almost entirely to the yolk. A number of other B vitamins are present in both the yolk and the white, but with most of them the concentration is higher in the yolk. The concentration of nicotinic acid is higher in the white.

A number of morphological, biochemical and physiological conditions which may influ-

ence vitamin distribution in plant and animal tissues, and some practical applications of the findings recorded in this review are enumerated and discussed briefly.

MEITES, J., FENG, Y. S. L. & WILWERTH, A. M. (1956). **Studies of cortisone-vitamin interactions.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 135-143. 3579

In studies on rats it was observed that cortisone acetate aggravated the symptoms caused by deficiency of vitamin B₁₂, thiamine or pyroxidine and induced food wastage; it produced hyperglycaemia, glycosuria and azoturia in rats deficient in vitamin B₁₂. It is considered that there is an interaction between cortisone, insulin, vitamin B₁₂, thiamine and pyroxidine in the metabolism of carbohydrates, proteins and, possibly, fats.—T.E.G.R.

MCCLYMONT, G. L. & SETCHELL, B. P. (1956). **Ovine pregnancy toxæmia. III. Further evidence of the correlation of depth of hypoglycaemia and induction of symptoms.**—*Aust. vet. J.* 32, 22-25. 3580

Significantly lower blood glucose levels occurred in underfed and fasted ewes which developed pregnancy toxæmia than in ewes which remained normal. No significant differences occurred in blood ketone levels. A high rate of spontaneous recovery was observed in spite of continued fasting and was accompanied by a rise in blood glucose levels.—D. C. BLOOD.

BÖMER, H. (1956). Die Acetonaemie der Rinder — eine Insuffizienz der Nebenschilddrüse? [Is acetonaemia in cattle due to insufficiency of the parathyroid gland?] — *Dtsch. tierärztl. Wschr.* 63, 54-58. 3581

Cattle with acetonaemia were cured by a single s/c injection of 10 ml. of dihydrotachysterol. Studies of the Ca and P content of the blood revealed the condition to be a deficiency of P. The pathogenesis was discussed.—M.G.G.

DISEASES, GENERAL

LAFORTUNE, J. -G. (1956). Une affection spasmodique des bovins. [The spastic syndrome in cattle.]—*Canad. J. comp. Med.* 20, 206-215. [In French. English summary.] 3582

The spastic syndrome in cattle, a morbid chronic condition that has become important in recent years for cattle breeders, is described. It is characterized by spasmodic contractions of certain groups of muscles; its course is slow and it gradually ends in paraplegia and death. No

cure is known at the moment and prevention of spreading rests upon prophylactic and palliative measures.—P. BOULANGER.

I. KACHAKHIDZE, A. V. (1955). [Present state of research on "khutili" disease of cattle in the Georgian S. S. R.]—*Trud. gruzin. nauchno-issled. vet. Inst.* 11, 103-112. [In Russian.] 3583

II. NANOBAHVILI, V. I. & KAKHADZE, M. Y. (1955). [Treatment of "khutili" disease in

cattle with solutions of copper and iron sulphates.]—*Ibid.* 147-150. [In Russian.] 3584

I. "Khutili" disease of cattle has occurred in parts of Georgia since at least 1908. It is sporadic, seasonal, and not contagious, and is characterized by loss of appetite and emaciation. Morbidity varied from 1.2 to 7.6% and 69-80% of affected cattle died. K. suggested that the disease was a nutritional toxicosis, other possible causes having been ruled out. [See also *V.B.* 16, 292.]

II. Forty out of 70 cattle in the early stage of "khutili" disease recovered after they were each given 6 g. iron sulphate with 10 g. sodium bicarbonate in a litre of water, once daily for 3 days. Copper sulphate, in 0.5-g. doses, was less effective than iron sulphate.

—R.M.

KING, J. O. L. (1956). Variations in the quantity and composition of milk yielded by diseased cows which did not show elevated body temperatures.—*Vet. Rec.* 68, 234-236. 3585

Milk samples from 30 diseased cows were examined on two occasions. Recovery was accompanied by a significant rise in milk yield, but changes in the fat and solids-not-fat percentages were not significant. The findings were compared with observations [*V.B.* 26, 602] on diseased cows which developed raised body temperatures.—M. B. HAWKSLEY.

DIESEL, A. M. (1956). Infectious atrophic rhinitis in relation to the importation of pigs from Europe including the United Kingdom and from the U.S.A. and Canada. — *J. S. Afr. vet. med. Ass.* 27, 65-73. 3586

A summary of the salient features of the disease and notes on the state control measures in Sweden, Great Britain, Holland and Germany. Methods are suggested for the control of the disease should it appear in the Union of South Africa.—M. B. HAWKSLEY.

JONES, L. D. (1956). Exudative epidermitis of pigs. — *Amer. J. vet. Res.* 17, 179-193. 3587

A skin condition of young piglets known by several names in different countries has been described as exudative epidermitis. The literature is reviewed and the summarized findings of the histopathological lesions in 24 cases are described. The condition is an acute generalized dermatitis which may affect the whole body, characterized by sudden onset and excess sebaceous secretion without pruritus, and which may end fatally. Three degrees of severity are

recognized, and the clinical signs and histopathology of each are described. The only consistent internal lesions were enlargement of the skeletal lymph nodes and renal changes. The aetiology is not known. [Though the paper by Luke & Gordon (*V.B.* 21, 2353) is quoted, no reference is made to their success in using a vitamin B supplement (Marmite) in treatment.]

—W. E. PARISH.

KÖHLER, H. (1956). Knochenmark und Blutbild des Ferkels. I. Das gesunde Ferkel. [Bone marrow and blood picture of the piglet. I. The healthy piglet.]—*Zbl. VetMed.* 3, 359-395. [English, French and Spanish summaries. English summary slightly modified.] 3588

The healthy new-born piglet has at least five million erythrocytes, 10 g.% haemoglobin and 6,000 leucocytes per cu. mm. About 60% of the leucocytes are granulocytes, and 30 to 35% are lymphocytes. Granulocytes at first exceed lymphocytes, but the proportion is reversed a few days after birth. Monocytes are scanty. From the third day values fall, but rise again from the 13th to the 20th day after birth. During the period of anaemia the blood contains numerous normoblasts but few reticulocytes. Values are given for the serum proteins in the fasting new-born piglet and the changes that occur later. The techniques of bone marrow puncture and histological examination are described in detail. The composition of the bone marrow and the individual haematopoietic cells are illustrated by histological sections and bone marrow films.

COTCHIN, E. & DYCE, K. M. (1956). A case of epiphyseal dysplasia in a dog. — *Vet. Rec.* 68, 427-428. [Authors' summary modified.] 3589

The radiological and histopathological features of epiphyseal dysplasia in a 5½-month-old Miniature Poodle are described.

TUFFERY, A. A. (1956). The laboratory mouse in Great Britain. I. Husbandry. II. Intercurrent infection (infantile diarrhoea). III. Intercurrent infection (ectromelia). IV. Intercurrent infection (Tyzzer's disease). — *Vet. Rec.* 68, 396-401; 433-440; 478-481; 511-515. 3590

I. A survey of methods of husbandry employed in the 30 principal colonies of lab. mice in Gt. Britain, with reference to the number of mice supplied, the keeping of records, and breeding, housing, feeding, hygiene and disease control. T. concluded that the method of

breeding and the standard of hygiene could be improved in many colonies.

II & III. T. discussed intercurrent infections of lab. mice in Gt. Britain. The commonest was infantile diarrhoea of unknown aetiology: it closely resembled the epidemic diarrhoea described in America [*V.B.* 18, 2019-20]. Ectromelia was present in at least 8 of the 30 colonies. Control was difficult: T. suggested improvements in hygiene and the destruction of infected mice.

IV. The disease described by Tyzzer (1917) is characterized by diarrhoea and liver necrosis. The cause is not certain, but *Bacillus (Actinobacillus) piliformis* has been found in infected mice. T. described some typical outbreaks. There are no specific control measures nor treatment.—R.M.

STEFFEE, C. H. & SNELL, K. C. (1956). **Morphologic alterations and dissecting aneurysms of aorta in cortisone-treated hamsters.**—*Fed. Proc.* 15, 533. 3591

During transplantation experiments, it was found that cortisone acetate caused massive intrathoracic or intraperitoneal haemorrhage in hamsters. Histological examination of the aorta in 50 cases revealed dissecting aneurysms in 40, situated just above the aortic valve, and necrotizing arteritis with rupture of the aorta in 10.—W. E. PARISH.

JENSEN, L. S., ALLRED, J., FRY, R. & MCGINNIS, J. (1956). **Effect of vitamin injections on survival of chicks with a high mortality syndrome.**—*Fed. Proc.* 15, 558-559. [Only abst. given. Abst. from abst.] 3592

S/c injection of a vitamin B-complex preparation reduced mortality in chicks which was tentatively attributed to avian encephalomyelitis.—M.G.G.

WASHKO, F. V. & MUSHETT, C. W. (1956). **Some observations on the pathology of the hemorrhagic condition of chickens.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 360-363. Discussion: pp. 363-365. 3593

P.M. examination of birds which had died from this condition revealed petechial and larger haemorrhages occurring subcutaneously and intramuscularly in the breast and leg, haemorrhages at the junction of the proventriculus and gizzard and along the intestinal tract and bone marrow colour changes ranging from pale pink to buffy yellow. In some cases there were gross changes, including necrosis, in spleen, liver and kidney. Microscopic examination of tissues

revealed lesions in the bone marrow, liver, spleen, kidney and intestinal tract. The bone marrow was typically hypoplastic. Liver changes included cloudy swelling and vacuolation of hepatic cells. Kidney changes were variable but there was often an acute glomerulonephritis. In severely affected birds, intestinal changes consisting of extensive necrosis of the epithelium and glandular epithelium were noted. Splenic changes reflected congestion, focal necrosis and lymphoid exhaustion followed by increased fibroblastic activity. On haematological examination anaemia was a common although not a constant finding. Whole blood clotting and prothrombin times were normal. Haemoglobin and haematocrit values closely paralleled bone marrow changes and degree of anaemia.—S. BRIAN KENDALL.

CARTRITE, H. T. (1956). **Clinical observations on the hemorrhagic anemic syndrome.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 359-360. Discussion: pp. 363-365. 3594

C. recognizes three forms of the "haemorrhagic anaemic syndrome" of fowls—acute, subacute and chronic. The acute disease causes the rapid death of birds in good bodily condition. Haemorrhages may be widely distributed throughout the carcass; the muscles and liver are very pale and the bird is anaemic. In the subacute condition muscle haemorrhages are less extensive, but the muscles have a slimy feel and appearance and the fascia is slimy and sticky. Erosion of the mucous membranes of the proventriculus and haemorrhages under the horny lining of the gizzard may be apparent. In the chronic condition there is general debility, sometimes a foetid diarrhoea and, post mortem, a varied picture, many cases having a severely eroded proventriculus and gizzard.

—S. BRIAN KENDALL.

I. SIEBURTH, J. MCN. & POMEROY, B. S. (1956). **Bluecomb disease of turkeys. II. Antibiotic treatment of poults.**—*J. Amer. vet. med. Ass.* 128, 509-513. 3595

II. SIEBURTH, J. MCN. & POMEROY, B. S. (1956). **Bluecomb disease of turkeys. III. Preliminary studies on etiology.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 301-306. [For Part I, see *V.B.* 25, 690.] 3596

I. The addition of chlortetracycline at a conc. of 250 p.p.m. to the drinking water of poults with bluecomb disease, reduced mortality by about 50%. Oxytetracycline did not favourably influence the mortality rate, and the results obtained with streptomycin were not constant. In order to control the disease, it was essential

to leave infected brooder houses empty for several weeks, and to clean and disinfect them before introducing fresh stock.

II. The oral administration to day-old poults of intestinal tissue from turkeys with bluecomb disease resulted in fatal catarrhal enteritis. Centrifugation and filtration experiments indicated that in size, the infective agent lay between bacteria and filtrable viruses. It was passaged from embryonated eggs inoculated with a suspension of liver, treated with neomycin, from infected birds, and underwent 13 passages without change in infectivity. About 25% of inoculated embryos showed lesions. Attempts to cultivate the agent on artificial media did not succeed.—R.M.

STURKIE, P. D., RINGER, R. K. & WEISS, H. S. (1956). Relationship of blood pressure to mortality in chickens.—*Proc. Soc. exp. Biol., N.Y.* **92**, 301-303. [Authors' summary modified.] **3597**

Systolic blood pressures were measured in fowls, at 7-10 months old. Records of mortality and egg production were kept until the birds were about 19 months old. About 30% of the birds had high pressure, 30% had low and 40% had median pressure. The mortality

in the hypotensive birds was nearly twice that in the other groups. There were no significant differences in body weight or egg production between groups. P.M. examination did not reveal the cause of the higher mortality in the hypotensive fowls.

BURUANA, L. M. & RAUCHBACH, K. (1956). Die Prothrombinämie und ihre Bestimmung bei Mensch und Tieren. [*Prothrombinaemia in man and animals.*]—*Mh. VetMed.* **11**, 83-86. **3598**

The prothrombin time was measured by a technique using a preparation of pig's lung instead of brain, with these results: man 31.6 sec., fowl 44.5, buffalo 26.2, horse 23.8, pig 19.7, ox 19.2, sheep and goat 15.4, rabbit 14.8 and dog 13.5.—M.G.G.

ROBERTS, S. R. (1956). A system of testing vision in animals.—*J. Amer. vet. med. Ass.* **128**, 544-546. **3599**

The test for the corneal reflex is to blow air on to the cornea, for the retinal reflex to throw pellets against a transparent sheet held before the eye, and for the pupillary reflex to shine a light into the eye.—M.G.G.

See also abst. 3658 (book, shepherd's guide to prevention of sheep diseases).

POISONS AND POISONING

PETTIT, G. D., HOLM, L. W. & RUSHWORTH, W. E. (1956). Lead poisoning in a dog.—*J. Amer. vet. med. Ass.* **128**, 295-297. **3600**

High blood and urine levels of lead were found in a terrier after removal of a lead object from the stomach. During treatment a total of 5 g. of calcium disodium ethylenediaminetetraacetate was administered parenterally in three courses. Urinary lead levels increased markedly following each injection of the drug. P.M. examination 11 weeks after surgery revealed the presence of excessive amounts of lead in the tissues.—M. B. HAWKSLEY.

DODD, D. C. & STAPLES, E. L. J. (1956). Clinical lead-poisoning in the dog.—*N. Z. vet. J.* **4**, 1-7. [Authors' summary modified.] **3601**

Several cases of lead-poisoning in dogs are described.

The usual clinical signs are: (1) abdominal pain, sometimes associated with vomiting and diarrhoea or constipation; (2) nervous signs, such as hysteria, convulsive seizures, blindness, leg weakness and altered disposition. There are no constant morbid anatomical findings, and

frequently nothing abnormal can be found P.M. The diagnosis can be confirmed in the live animal by analysis of the whole blood, urine and faeces and, in the dead animal, of liver and stomach contents. Examination of the blood for changes in the erythrocytes such as excess numbers of normoblasts and basophilic stippling may help to confirm the clin. diagnosis. The authors consider that lead-poisoning in dogs is more common than has hitherto been indicated and that the nervous signs have caused it to be confused with hysteria and virus diseases.

FRIED, J. F., ROSENTHAL, M. W. & SCHUBERT, J. (1956). Induced accumulation of citrate in therapy of experimental lead poisoning.—*Proc. Soc. exp. Biol., N.Y.* **92**, 331-333. [Authors' summary modified.] **3602**

The concept of interference in a metabolic cycle as a means of modifying metal toxicity was tested. Accumulation of citric acid in certain soft tissues of the rat was induced by i/p administration of small, non-lethal doses of sodium fluoroacetate. Of rats given the LD₉₀ dose of lead nitrate, 53% survived when treated

with sodium fluoroacetate. The LD₅₀ dose of lead nitrate was 67.7 mg./kg. (as Pb) in treated rats, as against 58.2 mg./kg. in controls.

MARSH, C. L., OLSON, C., JR. & BLORE, I. C. (1956). **Observations on collagen, vitamin A, and ascorbic acid in bovine hyperkeratosis.**—*Amer. J. vet. Res.* **17**, 410-414. [Authors' summary modified.] **3603**

Calves with bovine hyperkeratosis caused by chlorinated naphthalene had decreased amounts of collagen in their skins. Plasma levels of vitamin A and ascorbic acid were depressed. The pathological changes in epithelial and connective tissues may be due to changes in vitamin A and ascorbic acid metabolism.

HEINIG, A. (1955). Experimentelle Untersuchungen über die Chlornaphthalinvergiftung der Rinder unter besonderer Berücksichtigung der Stomatitis. [Experimental studies of chlorinated naphthalene poisoning in cattle, with special reference to stomatitis.]—*Arch. exp. VetMed.* **9**, 910-921. **3604**

In the winter of 1954-55 a disease, the cause of which was at first unknown, occurred on some 300 farms in East Germany, and over 5,000 cases occurred. About half of the affected cattle died or were slaughtered. The disease was characterized by severe gastro-enteritis with lesions in the mouth, oesophagus, stomach and intestines, and by emaciation; it resembled rinderpest in some respects, but was afebrile. Investigations led to the conclusion that two conditions were present: poisoning by a highly-chlorinated naphthalene compound, and a virus causing stomatitis, similar to that described by Schaaf *et al.* [*V.B.* **11**, pp. 221-222].

The source of the chlorinated naphthalene was traced to a consignment of binder twine which had been dressed with a mixture of waxes, including 5% of a chlorinated naphthalene compound known as "haftax"—a substance used as an insulator in the electrical industry, and not normally an ingredient of the waxy dressing. The illness occurred only on farms to which this particular batch of twine had been distributed. Experiments proved that 10 metres of this twine was sufficient to cause severe gastro-enteritis when fed to a cow. Hyperkeratosis of the skin, a feature of cases described in the U.S.A., was absent from some of the natural or experimental cases.

The stomatitis was readily transmissible by inoculation of emulsions of material from mouth lesions, after filtration through a Seitz filter. The stomatitis virus produced a mild disease, with

lachrymation, salivation and papular lesions of the lips, gums, papillae of the cheek, palate, and the under surface of the tongue. When cattle which had recovered from infection with the virus were given the toxic binder twine in the food, they developed gastro-enteritis, together with oral and oesophageal lesions. The stomatitis virus was apparently widespread in cattle, but of little economic importance. The poisoning appeared to predispose cattle to infection with stomatitis virus or to resuscitate latent infection.

CHOMSE, H. & AREND, I. (1956). Über die chemische Untersuchung von gewachstem Erntebindegarn, insbesondere über den Nachweis von chlorierten Naphthalinen. [Chemical examination of waxed binder twine, with special reference to the identification of chlorinated naphthalene.]—*Mh. VetMed.* **11**, 148-151. **3605**

Waxed binder twine, suspected of being the cause of the illness in cattle described in the preceding abst., was examined for toxic substances. The only toxic substance was chlorinated naphthalene: the wax used to impregnate the twine contained 2.9% chlorine, equivalent to 4.6% hexachlornaphthalene.—R.M.

I. BEER, J. (1956). Die sog. bösartige Magen-Darm-Entzündung der Rinder in Mitteldeutschland — eine Vergiftung mit Chlornaphthalinen (X-Krankheit, Hyperkeratose). [So-called malignant gastro-enteritis of cattle in Central Germany—poisoning with chlorinated naphthalene.]—*Arch. exp. VetMed.* **10**, 58-86. **3606**

II. DEDIÉ, K., MÜLLER, L. F., REICHEL, K. & BENTZ, H. (1956). Die Chlornaphthalinvergiftung der Rinder in Mitteldeutschland 1954/55 (Vorkommen, Verlauf und Ursache). [Poisoning of cattle with chlorinated naphthalenes in Central Germany from 1954 to 1955: occurrence, course and cause.]—*Ibid.* **87-111**. **3607**

III. PALLASKE, G. (1956). Zur pathologischen Anatomie der Chlornaphthalinvergiftung der Rinder in Mitteldeutschland 1954-1955. [Pathological anatomy of chlorinated naphthalene poisoning of cattle in Central Germany 1954/55.]—*Ibid.* **112-138**. **3608**

IV. BENTZ, H. & HERDMANN, I. (1956). Die Eignung des Meerschweinchens als Testtier zur Feststellung von Vergiftungen durch chlorierte Naphthaline. [The g. pig as a test animal in the confirmation of poisoning by chlorinated naphthalene.]—*Ibid.* **50-57**. **3609**

I. B. gave further details of the outbreak of chlorinated naphthalene poisoning reported in the two preceding absts., with particular reference to reproduction of the disease by feeding the toxic binder twine. He confirmed the simultaneous occurrence of papular virus stomatitis in some herds, and mentioned the transmission of the virus to human beings (including the author) through skin wounds. There are 3 coloured photographs of hyperkeratosis lesions of the mouth and abomasum, and 10 photomicrographs.

II. A detailed account of the same outbreak of chlorinated naphthalene poisoning, with details of the manufacture and composition of the toxic batch of binder twine, and the results of feeding experiments using cattle, pigs, cats and a sheep. A horse given 5 metres of chopped binder twine daily for 10 days developed no symptoms. There are 8 photographs of affected cattle.

III. Typical lesions were subacute, and occasionally chronic, catarrhal inflammation of the digestive tract, leading to the formation of erosions and ulcers, the proliferation of glandular tissue, and the formation of retention cysts; liver damage and proliferative changes in the bile ducts and gall bladder; chronic nephritis and cystic dilatation of the kidney tubules; hyperkeratosis of the skin.

IV. The application of chlorinated naphthalene to the skin of g. pigs caused hyperaemia and dermatitis. Oral administration of 2.5–20 mg./kg. body wt. of pentachloronaphthalene caused rapid loss in body wt. and death after 7–48 days (depending on the dosage). The symptoms and lesions were similar to those observed in cattle. Similar results were obtained by the local or oral application of the wax-like substance "haftax" or binder twine impregnated with "haftax."—R.M.

I. PRITCHARD, W. R., REHFELD, C. E., MIZUNO, N. S., SAUTTER, J. H. & SCHULTZE, M. O. (1956). **Studies on trichloroethylene-extracted feeds. I. Experimental production of acute aplastic anemia in young heifers.**—*Amer. J. vet. Res.* 17, 425-429. 3610

II. PRITCHARD, W. R., REHFELD, C. E., MATTSON, W. E., SAUTTER, J. H. & SCHULTZE, M. O. (1956). **Studies on trichloroethylene-extracted feeds. II. The effect of feeding different levels of trichloroethylene-extracted soybean oil meal to young heifers—experimental production of chronic aplastic anemia.**—*Ibid.* 430-437. 3611

III. PRITCHARD, W. R., MATTSON, W. E.,

SAUTTER, J. H. & SCHULTZE, M. O. (1956). **Studies on trichloroethylene-extracted feeds. III. The use of young calves for study of various aspects of toxicity of trichloroethylene-extracted soybean oil meal.**—*Ibid.* 437-441. 3612

IV. PRITCHARD, W. R., HAMMER, R., SAUTTER, J. H. & SCHULTZE, M. O. (1956). **Studies on trichloroethylene-extracted feeds. IV. Susceptibility of the horse to the toxic factor in trichloroethylene-extracted soybean oil meal.**—*Ibid.* 441-443. 3613

V. PRITCHARD, W. R., MATTSON, W. E., SAUTTER, J. H. & SCHULTZE, M. O. (1956). **Studies on trichloroethylene-extracted feeds. V. Failure to demonstrate the presence of a toxic factor in the milk of cows fed toxic specimens of trichloroethylene-extracted soybean oil meal.**—*Ibid.* 444-445. 3614

VI. PRITCHARD, W. R., PERMAN, V., MATTSON, W. E., SAUTTER, J. H. & SCHULTZE, M. O. (1956). **Studies on trichloroethylene-extracted feeds. VI. The effects of feeding trichloroethylene-extracted soybean oil meal to sheep.**—*Ibid.* 446-448. 3615

VII. PRITCHARD, W. R., SAUER, F., REHFELD, C. E., PERMAN, V., SAUTTER, J. H., WADA, S. & SCHULTZE, M. O. (1956). **Studies on trichloroethylene-extracted feeds. VII. Observations with laboratory animals fed trichloroethylene-extracted soybean oil meal.**—*Ibid.* 448-454. [Authors' summaries modified.] 3616

I. Acute aplastic anaemia was produced in heifers by feeding trichloroethylene-extracted soya bean oil meal. The clinical and haematological features and the P.M. findings were essentially the same as those observed on farms where this meal was fed to cattle. There were marked differences in the degree of toxicity produced by two different specimens of this meal.

II. Different specimens of trichloroethylene-extracted soya bean oil meal were fed at various levels to heifers continuously or intermittently. All induced a temporary or permanent leucopenia and thrombocytopenia. Death from aplastic anaemia occurred as late as 563 days after the start of feeding 1 lb. daily of a toxic specimen. Soya beans processed with trichloroethylene within a few months after harvest yielded a meal of high toxicity. Processing of old soya beans yielded a meal with low toxicity.

III. The young calf was suitable for the study of intoxication by trichloroethylene-extracted soya bean oil meal. Not all soya bean products were toxic to calves, but specimens of

meal known to be toxic induced fatal aplastic anaemia in calves as early as 24 days after the start of feeding. The signs and lesions of intoxication were essentially the same in calves as in older cattle. The principal difference was that, in the calf, the erythrocyte count and the haemoglobin conc. remained normal. Trichloroethylene, in amounts far exceeding those present in toxic meal, was not toxic when fed to calves for as long as 346 days. The toxic factor was not detected in soya bean oil or in the phosphatide fraction. Digestion of the meal in the rumen was not necessary for the establishment of toxicity; the toxicity was not due to an allergic reaction.

IV. Two horses fed toxic meal developed fatal aplastic anaemia after consuming from 1,000 to 1,100 lb. over periods of 198 and 287 days. The clinical signs, blood changes, and lesions were indistinguishable from those in cattle. Feeding as much as 6 lb. of hexane-extracted soya bean oil meal per day to a gelding over an 8-month period had no harmful effects.

V. Three lactating cows fed a relatively large amount of toxic meal developed aplastic anaemia. Cats, dogs, and calves, fed as the principal component of their diet, milk produced by these cows, failed to show clinical signs or blood changes suggestive of toxicity.

VI. A specimen of meal which was highly toxic for cattle produced illness and signs of blood dyscrasia in sheep. The haematological changes were not always those associated with aplastic anaemia. Sheep appeared to be much more resistant to the toxic effects of the meal.

VII. Toxic meal was fed for long periods in large amounts to mice, rats, hamsters, g. pigs, rabbits, and dogs. In contrast to cattle and horses, none of these showed any evidence of aplastic anaemia or other blood changes. Feeding this meal to g. pigs invariably produced gradual generalized debilitation which terminated in death. G. pigs fed similar quantities of hexane-extracted meal gained weight and remained normal. Feeding large amounts of toxic meal to dogs induced the gradual development of anorexia, weight loss, general debility, and death. Feeding the same amount of hexane-extracted meal had no detectable harmful effects. It was not known whether the factor which produced debility and death in g. pigs and dogs was the same as that responsible for the production of aplastic anaemia in cattle and horses.

STEVENS, C. E., CLARK, J. J. & SELLERS, A. F. (1956). Studies on experimental canine interstitial nephritis. I. Evaluation of certain

nephrotoxic agents.—*Amer. J. vet. Res.* 17, 389-397. 3617

Interstitial nephritis was set up in dogs by repeated injections into the renal artery of lithium-carmin stain or *Staph. aureus* toxin. The following did not cause nephritis:— India ink, deoxycortone acetate, nephrotoxic serum, killed suspension of *Leptospira canicola*.—R.M.

ST. GARAY, A. (1956). Role of ergothioneine and catalase in infection by ergot fungus (*Claviceps purpurea* Tul.) — *Nature, Lond.* 177, 91-92. 3618

Germination of the conidia of *C. purpurea* was inhibited by the presence of hydrogen peroxide in the culture media; ergothioneine removed the inhibition. The conidia-free portion of honey-dew was found to contain both ergothioneine and catalase and the author suggests that the presence of these substances may partially account for the fact that honey-dew conidia are more aggressive than those produced on culture media.—M. B. HAWKSLEY.

KOGER, L. M. (1956). Onion poisoning in cattle. — *J. Amer. vet. med. Ass.* 129, 75. 3619

P.M. examination of cattle that had died from eating rotted onions revealed severe anaemia. Chemical tests revealed an alkaloid which produced immediate death when injected into mice and g. pigs.—M.G.G.

LEE, H. J., KUCHEL, R. E. & TROWBRIDGE, R. F. (1956). The aetiology of phalaris staggers in sheep. II. The toxicity to sheep of three types of pasture containing *Phalaris tuberosa*. — *Aust. J. agric. Res.* 7, 333-344. [Authors' summary slightly modified.] 3620

The seasonal occurrence of phalaris staggers in sheep on three types of pasture containing *P. tuberosa*, during periods of 3 years, 2 years and 1 year respectively, is described. A relatively pure stand of phalaris proved toxic to sheep for almost 5 consecutive months of its growing period. The consumption of appreciable quantities of lucerne, subterranean clover, or other plants, along with the phalaris, reduced the hazard very considerably. Neither the dormant tubers nor the standing straw of phalaris proved to be toxic. The widespread occurrence of phalaris staggers on a diversity of soil types is reported and the possibilities that the toxicity of phalaris may fluctuate according to climate and terrain is discussed. The view is advanced that actively growing phalaris is potentially toxic to sheep under most, if not all, circumstances.

BULL, L. B., DICK, A. T., KEAST, J. C. & EDGAR, G. (1956). An experimental investigation of the hepatotoxic and other effects on sheep of consumption of *Heliotropium europaeum* L.: Heliotrope poisoning of sheep. — *Aust. J. agric. Res.* 7, 281-332. [Authors' summary modified.] 3621

Two flocks of breeding ewes were grazed on natural pastures containing *H. europaeum* and a third on an area on which irrigation water was used to favour germination and early growth of the plant. After the sheep had grazed the plant for the first period, a small proportion, from 1 to 7% died with damaged livers. After they had again grazed the plant during the following year, the death rate from liver rose to 50% in the exploratory experiment, to 38% in the first controlled flock experiment, and to 70% in the second controlled flock experiment. Haematogenous jaundice was present in approx. half the sheep that died. Haemoglobinuria with haemoglobinuria was present, usually in a mild form, in 31% of those that died during the second year of the first controlled experiment, and in 5% during the second year of the second controlled experiment. In the autumn and spring when the pastures were lush, many of the sheep while in good bodily condition died suddenly. Later, most of the deaths were in sheep that had lost condition. The affected sheep commonly exhibited a fall in haemoglobin and a rise in bilirubin in the blood. Tests showed a fall in the prothrombin values. There were indications of a fall in plasma albumin, and also a fall in ability to store glucose. Chemical analyses of livers from sheep that died showed the copper values to be above normal, approx. 80% being over 1,000 p.p.m. Histopathological examinations showed that the pathognomonic change was an increase in size of the liver cells associated with their increased death rate and loss of regenerative powers. The changes resulted in an atrophic hepatosis with little replacement fibrosis. There was an accumulation of ceroid in the livers, and a terminal occurrence of inclusion globules in the

liver cells. Related field investigations confirmed the findings of the experiments, and showed that the liver damage produced by the consumption of *H. europaeum* predisposed sheep to the haemolytic crisis of chronic copper poisoning.

EICHLER, W. & FRANKE, E. -R. (1955). DDT-HCC-Kleiverfütterung an Schweine. [Experimental feeding of pigs on meal contaminated with D.D.T. and B.H.C.]—*Arch. exp. VetMed.* 9, 595-617. 3622

In East Germany the corn-weevil is controlled by dusting stored grain with "anoxid", a preparation containing D.D.T. and B.H.C. [amounts not stated], at the rate of 1 g. per kg. of grain. The authors added "anoxid" to the food of 2 groups of pigs at a daily dosage of 1 g. and 3 g. respectively, during the fattening period of 6 months. At the end of this period the pigs were slaughtered, together with a comparable group of untreated controls. The body weight of treated pigs was less than that of untreated pigs, and in some of them there was fatty degeneration, nephrosis, and subacute or chronic enteritis. There was sufficient D.D.T. in the muscle of treated pigs to render it unsuitable for human consumption.—R.M.

ROUSSEAU, M. M. (1956). Étude de la toxicité du toxaphène sur quelques animaux supérieurs. [Toxicity of toxaphene.]—*Bull. Acad. vét. Fr.* 29, 97-100. Discussion: pp. 100-101. 3623

The acute toxicity *per os* varied from 30-60 mg./kg. in the dog to 800-1,000 mg./kg. in the fowl. A fatty, liquid or scanty diet decreased the dose required. When administered in the daily diet 300 p.p.m. for 30 days was the limit of tolerance for dogs, 800 p.p.m. for 90 days for g. pigs, and 1,500 p.p.m. for 70 days for rats.

In discussion on the paper disagreement was expressed with this relatively low toxicity and the absence of references was deplored.

—A SEAMAN.

See also absts. 3551 (toxicity of captan-treated maize); 3633 (nitrite poisoning from meat); 3655 (report, Jamaica).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease).

HARTHOORN, A. M. (1956). The effect of the infusion of dextraven solution on the blood pressure during circulatory imbalance of haemorrhagic origin in the dog.—*Brit. vet. J.* 112, 284-299. [Author's summary modified.] 3624

Haemorrhagic hypotension was induced in 5 dogs which had been lightly anaesthetized with pentobarbitone sodium. They were considered to be in a state of shock on the sole criterion that the blood pressure did not rise from shock level for 2½ hours. In all cases the infusion of

Dextraven (fractionated dextran) solution resulted in a sustained rise in blood pressure and, in the 4 cases observed, in restoration to health.

BENJAMIN, H. B., WAGNER, M., IHRIG, H. K. & ZEIT, W. (1956). **Hypothermia by internal cooling.**—*Science*, **123**, 1128-1129. **3625**

Dogs were cooled from 100° to 80°F. in 20 min. by lowering the temp. of the circulating blood. The blood passed through a circulating pump and a cooling bath by means of a polyethylene tube cannulated with the carotid artery and the femoral vein. The blood was warmed again by means of a heater in the cooling bath. There were no adverse effects either during or after the experiment.—M.G.G.

SCHREIBER, J. (1956). Die anatomischen Grundlagen der Leitungsanästhesie beim Rind. III. Teil. Die Leitungsanästhesie der Nerven der Vorderextremität. [**Anatomical basis of local anaesthesia in cattle. III. Nerves of the thoracic limb.**] — *Wien. tierärztl. Wschr.* **43**, 273-287. **3626**

A review of the innervation of the fore leg of the cow with illustrations and tabulated

reference to the sites of injection in local anaesthesia. S. drew attention to the advantages of anaesthesia of the brachial plexus in surgical operations involving deep-seated parts, and described a suitable injection site. To overcome the slow permeability of the fatty tissue in the injection area the use of a 4% solution of the anaesthetic, with added "permease" is recommended.—F. K. LEEB.

TURNER, A. W. & HODGETTS, V. E. (1956). **Barbiturate antagonism: the use of "Megimide" and of "Daptazole" in curtailing "Nembutal" anaesthesia and in treating apnoeic "Nembutal" intoxication in sheep.** — *Aust. vet. J.* **32**, 49-54. **3627**

I/v injection of "Megimide" ($\beta\beta$ -methyl-ethylglutarimide), 22.5 mg./kg., greatly reduced the recovery period in sheep anaesthetized with pentobarbital sodium. Ten out of 13 sheep in which respiratory failure had been induced by overdosage of pentobarbital recovered after i/v inj. of 300 mg. of "Daptazole" (2:4-diamino-5-phenylthiazole) followed by 150 ml. of "Megimide", whereas 4 controls died. No ancillary measures were taken to stimulate respiration.—D. C. BLOOD.

See also absts. **3340** (resistance of staphylococci to antibiotics); **3346** (effect of antibiotics on cell content in milk); **3347** (disinfectants in strangles); **3362-3363** (Johne's disease); **3413** (antibiotics against V. fetus); **3433** (Babesiosis); **3434** (theileriasis); **3462-3463** (mepacrine); **3464** (acridines); **3514** (malathion); **3516** (diazinon); **3529-2535** (anthelmintics).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

PAGOT, J. (1956). Température corporelle des zébus et des métis zébus taurins sous les tropiques. [**Body temperatures in zebu and zebu crosses in tropical countries.**] — *Rev. Elev.* **9**, 21-41. [English and Spanish summaries.] **3628**

Zebu cattle can withstand wider variations in temperature than zebu \times Montbeliard crosses. The zebu \times Charollais cattle were in a state of constant hyperthermia and less adaptable than the Montbeliard.—T.E.G.R.

KAEMMERER, K. (1955). Gibt es zyklusbedingte Rhythmen der Körperfunktionen? [**Are there cyclic rhythms of the corporal functions?**] — *Arch. exp. VetMed.* **9**, 876-898. **3629**

K. discussed the apparent existence of a 7-day cycle of body function in the cow, as reflected in periodic changes in the body temp., blood picture and daily milk yield.—R.M.

KITCHELL, R. L., CAMPBELL, B., QUILLIAM, T. A. & LARSON, L. L. (1956). **Neurological factors in the sexual behavior of domestic animals.** — *Proc. 92nd Ann.*

Meet. Amer. vet. med. Ass. 1955. 177-189. [Authors' summary modified.] **3630**

The gross dissection of the innervation of the genital organs of cattle and sheep is described, with a summary of the peripheral distribution of the branches of the pudendal nerve. The histology of the genital nerve endings is discussed, with special reference to the ewe. A hypothesis is advanced to explain the effect of tumescence on genital sensibility in terms of the fine emergent fibres of the encapsulated end-organs. Spectra of the size of the fibres in the genital nerves are presented. The total number of myelinated fibres in the genital organs is not less in the female than in the male, though there is some reduction in fibre representation in the larger groups. The compound action potential of the pudendal nerve is analysed. The reflex pathways through the third and fourth sacral segments are described and contrasted with those of the more cranial segments. The presence of crossed return in the segmental reflex of these segments is recorded. The relevance of these studies to an understanding of sexual behaviour is discussed.

ZIMMERMANN, A. (1955). Über die Leberklappe der hinteren Hohlvene des Schweines, *Valvula hepatica venae cavae caudalis suis*. [The "liver valve" in the posterior vena cava of the pig.] — *Anat. Anz.* 101, 226-229. 3631

In pigs, rarely in cattle and sheep, a protrusion of the hepatic parenchyma reduces the

lumen of the embedded part of the vena cava. It is stated that during diaphragmatic contractions this protrusion is withdrawn and consequently blood pressure is lowered. This regulating action is particularly evident during digestion of large amounts of food, when, because of the more lively portal flow, blood pressure is high—E.G.

See also abst. 3588 (bone marrow and blood picture in healthy piglets).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

HEPP, L. (1956). Zur Frage des Anaerobennachweises bei der bakteriologischen Fleischuntersuchung. [Demonstration of anaerobes in bacteriological meat inspection.] — *Zbl. VetMed.* 3, 88-109. [English, French and Spanish summaries.] 3632

Heating samples of suspected meat to 80°, 90° or 100°C. for the elimination of aerobes had a deleterious effect on pathogenic anaerobes, even when samples had a high spore content. H. recommended that samples should also be examined with the microscope.—M.G.G.

ANON. (1956). Nitrite poisoning from meat. — *J. Amer. vet. med. Ass.* 128, 497. 3633

Two cats died an hour after eating sausage meat with a high nitrite content (up to 9,000 p.p.m.), but a dog, which ate a small amount, recovered.—M.G.G.

ANON. (1956). United Nations. Joint FAO/WHO Expert Committee on Meat Hygiene. — *Tech. Rep. Wld Hlth Org. No.* 99, pp. 52. [Also issued as *FAO agric. Study No.* 30.] 3634

This international committee discussed meat hygiene, food poisoning, abattoir construction, methods of inspecting meat, and problems connected with its distribution and sale. It recommended that meat inspectors should be trained by, and under the supervision of, veterinary surgeons. There are 9 appendices and a bibliography, the former providing data on food poisoning, details of meat inspection technique and lab. tests, and the treatment of meat containing *Trichinella* or *Cysticercus* by temperature control and salting.—R.M.

REPRODUCTION AND REPRODUCTIVE DISORDERS

EMMENS, C. W. & BLACKSHAW, A. W. (1956). Artificial insemination. — *Physiol. Rev.* 36, 277-306. 3635

This is a competent, scholarly, and relatively complete review of the subject, from the technical rather than the administrative angle. 398 references are quoted, but the list contains some errors of spelling and date. The Scandinavian work on what constitutes the optimum calving-service interval is ignored. The sections on assessment of semen quality and on deep freeze in particular appear quite excellent. The inclusion of a few more dates in the text would add to the interest. It is obvious that the authors have little practical experience of breeding work among cows; no mention is made of the artificial insemination of pigs, but interesting details are given of the need for further work with sheep and on advances with poultry. —F. L. M. DAWSON.

ROCKHOLD, W. T. & HIESTAND, W. A. (1956). Ejaculatory response induced by potassium chloride in small mammals.—*Proc. Soc. exp.*

Biol., N.Y. 92, 402-404. [Authors' summary modified.] 3636

I/p injection of KCl induced ejaculation in mice, rats, g. pigs, hamsters and ground squirrels, but not in pigeons and cats. A dose of 400 mg./kg. of 3.5% KCl was found to be the most effective in mice. Only salts containing potassium induced ejaculation. It was not possible to standardize the ejaculatory response by measuring ejaculatory time or by weighing the ejaculate. Exirpation of the seminal vesicles, bilateral castration, and analysis of the fructose content of the semen indicated the seminal vesicles as the source of the fluid. The fluid never contained spermatozoa. Successive daily injections of KCl caused ejaculation without apparent harm to the animals.

HUNSAKER, W. G., AITKEN, J. R. & LINDBLAD, G. S. (1956). The fertilizing capacity of fowl semen as affected by time and temperature of storage. — *Poult. Sci.* 35, 649-653. [Abst. from authors' summary.] 3637

Fowl semen was stored at temperatures

ranging from 0° to 30°C. for up to 9 hours. Fertility declined as the length of storage increased, the rate of decline depending on the temperature. The least decline occurred at 15°C., although there were only small differences between samples kept at 10°, 15° and 20°C. At 0°C. fertility lasted for 2 hours, then declined rapidly. At 30°C. fertility declined immediately, and was completely lost after 4 hours.

SCHLOTTHAUER, C. F. (1956). **The prostate gland in the dog.** — *Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 234-240. **3638**

This paper deals with the anatomy, physiology and pathology of the prostate gland in the dog. Symptoms associated with diseases of the gland are described and treatment of certain pathological conditions is discussed.—T.E.G.R.

TEUNISSEN, G. H. B. (1956). Die Wirkung von Östron und Testosteron auf die Prostata des erwachsenen Hundes. [The effect of oestrone and testosterone on the prostate of the adult dog.] — *Zbl. VetMed.* **3**, 307-318. [English, French and Spanish summaries. English summary modified.] **3639**

Oestrone injections in uncastrated dogs did not reduce or only slightly reduced the volume of the prostate. The fibro-muscular tissue increased, particularly its muscle component. In castrated dogs atrophy of the prostate was much more marked, and in both castrated and uncastrated dogs oestrone considerably reduced the glandular tissue, but there were also signs of cellular activity (mitosis, secretion and cysts) and of transformation into stratified squamous epithelium, especially in the centre of the gland.

Testosterone enlarged the prostate by stimulating the glandular tissue. This hormone will prevent the atrophy produced by castration.

AUSTIN, C. R. & BRUCE, H. M. (1956). **Effect of continuous oestrogen administration on oestrus, ovulation and fertilization in rats and mice.** — *J. Endocrin.* **13**, 376-383. [Authors' summary slightly modified.] **3640**

Stilboestrol was given in the drinking water at different concentrations to groups of normal adult rats and mice. Continuous vaginal cornification was obtained with the higher dosages and both species showed a capacity for repeated coitus at intervals corresponding approximately to those separating oestrous periods in untreated

animals. The response was much more uniform in the mice. Inhibition of ovulation required dosages well above those that clearly influenced the nature of the vaginal smear. The great majority of ovulated eggs were found to undergo spermatozoon penetration, and supplementary spermatozoa were commonly seen. Results suggest that the frequency of spermatozoon penetration was increased by moderate oestrogen dosage. Fertilization appeared to be quite normal.

GILMAN, J. P. W. (1956). **Inherited developmental defects in cattle.**—*Proc. 92nd Ann. Meet. Amer. vet. med. Ass.* 1955. 49-53. **3641**

This paper deals with 4 hereditary defects of cattle, viz., congenital cataract in Jersey cattle; umbilical hernia in the Holstein-Friesian breed; dwarfism in Hereford cattle; and the so-called "baldy calves" in the Holstein-Friesian breed. This last condition is characterized by:—scaliness and thickening of the skin—alopecia, skin lesions on the head, failure to develop horns, salivation and lameness due to stiff joints and overgrown hooves. The part played by artificial insemination in the transmission and perpetuation of hereditary defects is discussed. —T.E.G.R.

PERRY, J. S. (1956). **Observations on reproduction in a pedigree herd of Large White pigs.**—*J. agric. Sci.* **47**, 332-343. **3642**

The average number of piglets born, and of those born alive, reached a maximum at the 5-7th litter. It appeared that embryonic mortality bore more heavily on litters of older sows, while the incidence of stillbirth (of fully developed foetuses) is not related to age or number of dams' litters. Twenty-nine sows were discarded out of 136, mostly on account of a "chronic mastitis" or poor maternal qualities. 164 litters were studied in all.—F. L. M. DAWSON.

SYKES, A. H. (1956). **Short day-length and egg production in the fowl.** — *J. agric. Sci.* **47**, 429-434. [Author's summary modified.] **3643**

The effect of a day-length of 6 hours on age at sexual maturity and on egg production was studied in 48 fowls. They matured at the same age as controls but at a lower weight. Egg production over 58 weeks was low. An increase in day-length between December and August always raised production. A decrease in day-length between February and August always

lowered production; this fall was greater the later in the year that the change occurred. It was concluded that age at sexual maturity is not

affected by the absolute length of day, and that egg production is affected both by absolute length and by change in length.

See also absts. 3398 (course of *L. pomona* infection in pregnant heifers); 3413 (vibriosis); 3467 (virus abortion in mares); 3512 (haemolytic disease in piglets); 3580 (ovine pregnancy toxæmia).

ZOOECHNY

BELINKI, N. G. (1956). [Increasing the vitality and productivity of animals by the parenteral administration of blood serum.]—*Proc. Lenin Acad. agric. Sci.* 21, No. 2, pp. 28-30. [In Russian.] 3644

Bovine serum, deprived of its species-specific properties, was administered by repeated s/c injections to increase the vitality of protein-deficient animals, to increase the quality and volume of ram semen, and to remedy bovine sterility. [Method of preparation and dosage not given.]—R.M.

POKROVSKI, V. A. (1956). [Optimum popula-

tion density of fowls.]—*Proc. Lenin Acad. agric. Sci.* 21, No. 4, pp. 37-41. [In Russian.] 3645

Increasing the density of housed fowls from 2 to 4 a sq. metre of floor space led to a decrease in annual egg production and in the amount of haemoglobin in the blood, and increased the temp. of the hen house by 2° to 3°C. The offspring of fowls kept at 3 to a sq. metre had better growth rates and higher egg yields than those of similar fowls kept at 4 to a sq. metre. Crowding increased the gross yield of eggs per hen house but lowered production of the individual hens.—R.M.

See also absts. 3658 (shepherd's guide to the prevention of sheep diseases); 3659 (book, biology breeding and diseases of mink); 3660 (dictionary of dairying).

TECHNIQUE AND APPARATUS

CALLOW, D. S. & PIRT, S. J. (1956). Automatic control of pH value in cultures of micro-organisms. — *J. gen. Microbiol.* 14, 661-671. [Authors' summary modified.] 3646

Equipment for the automatic control of pH in cultures of micro-organisms is described. It was designed for a continuous culture apparatus with a capacity of 2 litres. It will control the pH with an accuracy of ± 0.05 unit for periods of many hundred hours. The pH may be altered merely by turning a knob. It is sufficient to check the pH meter once every day or two. The main components of the apparatus are standard commercial products.

NEWING, C. R. & MACLEOD, A. K. (1956). Magnetically induced vortex for small-scale aerated culture studies.—*Nature, Lond.* 177, 939-940. 3647

A magnetic bar was inserted into a 4-litre flask of broth before sterilization and inoculation with *Pasteurella septica*. When the bar was rotated until a stream of air bubbles was given off, the yield increased tenfold. There was no decrease in capsule size. The organism of bovine contagious pleuro-pneumonia was also grown in this way.—A. SEAMAN.

ERWIN, E. S., DYER, I. A., MEYER, T. O. & SCOTT, K. W. (1956). Uses of aspiration

biopsy technique. — *J. Anim. Sci.* 15, 428-434. 3648

Modifications of trocar, cannula and Record syringe are described, for use in liver biopsy of cattle and piglets, and for back-fat sampling of fattening pigs. The operation in cattle takes one min. and is performed without anaesthesia.

—A. SEAMAN.

ROMAGNOLI, A. (1956). Indirect blood pressure measurement in sheep and goats employing the Electronic Plethysmograph: validation against the Capacitance Manometer. — *Brit. vet. J.* 112, 247-252. [Abst. from author's summary.] 3649

An indirect method of measuring blood pressure by means of the Electronic Plethysmograph was compared with a direct method using the Capacitance Manometer. The tests were made on 16 goats and 4 sheep of varying size and age. The Electronic Plethysmograph systolic and diastolic pressures were in close agreement with those recorded by the Capacitance Manometer but were usually slightly lower. It was concluded that the Electronic Plethysmograph is sufficiently accurate for measuring the blood pressure of sheep and goats.

See also absts. 3359 (counting viable suspensions of tubercle bacilli); 3360 (intravascular infection of chick embryos with mycobacteria); 3385 (selective medium for *Salmonella*); 3414 (continuous culture of bacteria); 3519 (rendering arthropods translucent for microscopy).

REPORTS

GREAT BRITAIN, (1956). *The West of Scotland Agricultural College. Report on the work of the College for the year ended 30th September 1955.* pp. 64. Stirling: Jamieson & Munro, Ltd. 3650

The number of students attending classes at Glasgow and Auchencruive was 648 compared with 656 in 1954.

In the bacteriology section 28,652 samples of milk, water and ice-cream were examined. The work of the section is much concerned with bovine MASTITIS. Approximately 100 herd tests were carried out and 13,903 samples of milk were examined: 13% of the affected cows had streptococcal mastitis, 33% staphylococcal, 7% a mixed streptococcal and staphylococcal infection and 46% a non-specific infection. Prior to 1947—before treatment on a large scale was carried out—it was considered that 90% of the mastitis-infected cows had streptococcal infection.

Of the 10,000 samples of milk examined during the year, 8,000 were connected with farm milks falling below the "Milk Special Designations" standard.

The Veterinary Investigation Service examined 4,429 specimens, 1,660 of which were faecal samples from sheep on intensive grazing experiments, 730 milk samples for mastitis and 557 faecal samples from cattle, sheep and horses.

Fewer outbreaks of *Nematodirus* infection occurred, but the losses on individual farms were exceptionally heavy. None occurred on hill farms.—D. S. RABAGLIATI.

UNION OF SOUTH AFRICA. (1956). *The South African Institute for Medical Research, Johannesburg. Annual Report for the year ended 31st December 1955.* pp. 109. Johannesburg: The Institute. 3651

Methods of titrating *Clostridium chauvoei* antigen were studied in collaboration with the veterinary laboratory at Onderstepoort. A special investigation on bovine type TUBERCULOSIS in human beings was carried out. The Institute runs a RABIES diagnostic service. The Flury strain virus has been of great value in virus protection tests. Rabies antiserum is being improved. A study of the blood protozoa of South African animals has not revealed any malarial parasites; microfilariae were found in monkeys and birds. Two hundred and thirty-two horses were maintained for the production of anti-snake bite serum and tetanus antitoxin. Extensive fungal invasions were found in some

cases of diseases that had been intensively treated with antibiotics.—R. G. MARES.

INDIA. (1955). *Annual Report of the Imperial Veterinary Research Institute, Mukteswar and Izatnagar, for the years 1942-46.*—pp. 88. Simla: Govt. of India Press. Rs. 2/10/- or 4sh. 3d. 3652

This report covers the period when annual publication was suspended owing to war conditions. The usual activities of the Institute proceeded under difficult conditions. The conclusion is reported of schemes for:— the investigation of contagious abortion in cattle, sheep and goats; a survey of helminth infection in India; an investigation of the feeding value of molasses for cattle; and research into poultry diseases. New schemes undertaken include:— vaccination of Indian cattle against foot and mouth disease; investigation of anaerobe diseases; study of helminths; artificial insemination; animal nutrition; investigation of defects of hides and skins. Work on rinderpest, Newcastle disease, foot and mouth disease and fowl pox viruses continued and vaccines were produced. A survey of the incidence and geographical distribution of bovine tuberculosis was made. Pleuro-pneumonia in cattle and goats was investigated. Haemorrhagic septicaemia, anthrax and *Clostridium* infections were also investigated. Studies on helminth parasites of ruminants and poultry, on surra in equines and *Theileria* infection in cattle continued. Activities in connexion with poultry research, nutrition and genetics are reported.—T.E.G.R.

INDIA. (1955). *Annual Report of the Indian Veterinary Research Institute, Mukteswar and Izatnagar for the year 1952-53.* pp. 114. Simla: Government of India Press. Rs. 2/12/- or 4s. 6d. 3653

Work on the viruses of rinderpest, Newcastle disease, fowl, sheep and goat pox, sheep and goat dermatitis, foot and mouth disease and equine encephalomyelitis continued; vaccines were produced against a number of these diseases. Bacterial diseases investigated include bovine mastitis, pasteurella infections, tuberculosis, Johne's disease and anaerobe infections. Johnin and tuberculin production and research on the respective tests continued. Studies on the blood proteins in surra, the morphology of *T. evansi*, ecto and endo parasites, animal nutrition and genetics were carried out. Poultry research made further progress. The report incorporates 5 appendixes of which one is a list of biological

products and another, in two parts, is a list of specimens examined during the year.

—T.E.G.R.

REPUBLIC OF IRELAND. (1956). **Twenty-fourth Annual Report of the Minister for Agriculture, 1954-55.** pp. 174 + 86. Dublin: Stat. Off. 8s. 6d. **3654**

The bovine TUBERCULOSIS eradication scheme was brought into operation on the 1st September, 1954, and is purely voluntary. Herds in all parts of the country can be tested free—by the owners' veterinary surgeon—except for the final tests. Up to the 31st March, 1955, 195,212 animals in 12,274 herds had been tested. There were 17% reactors. Arrangements are made for the disposal of reactors. The promising results in 1953 in the prevention of WHITE SCOUR in calves by the administration of an aureomycin supplement were confirmed.

Following the improvement of the FOOT AND MOUTH DISEASE position abroad, passengers arriving in Eire who had been visiting farms, were asked to submit to disinfection immediately before landing. MYXOMATOSIS was encountered for the first time in 1954.

An enquiry made by certain animal welfare societies into the export of horses to the Continent revealed that the shipping arrangements were satisfactory.

The Veterinary College of Ireland had 203 students, 35 of whom were freshmen.

—D. S. RABAGLIATI.

JAMAICA. (1955). **Annual report of the Department of Agriculture for the year ended 31st December, 1954.** pp. 69. Kingston: Govt. Printer. 4s. [Report of the Veterinary Division pp. 35-36.] **3655**

Increased staff enabled the Department to run a subsidized clinical veterinary service. ANTHRAX was confirmed and is controlled by vaccination. BLACKLEG and ENTEROTOXAEMIA of sheep occurred and vaccine was available. HAEMORRHAGIC SEPTICAEMIA appeared after a long period. TUBERCULOSIS was low in incidence and testing schemes are under way. BRUCELLOSIS was a problem in a few herds. TETANUS and SWINE ERYSIPELAS were sporadic; vaccines are available. ULCERATIVE LYMPHANGITIS was treated frequently; it should decrease

with the decline of mule transport and slaughter of infected animals. ANAPLASMOSIS was treated successfully with "Camoforn" and terramycin: PIROPLASMOSIS also occurs. SWINE FEVER was confirmed three times; a ban on importing pork from the U.S.A. is maintained; rabbit-adapted vaccine was given up as it caused deaths and retarded growth. NEWCASTLE DISEASE caused heavy losses and a survey proved it to be endemic. INFECTIOUS BRONCHITIS and CHRONIC RESPIRATORY DISEASE of fowls exist but cause few losses. A survey for animal carriers of ST. LOUIS ENCEPHALITIS revealed suspicious antibodies in a number of mules only. Helminth parasites caused trouble in young stock; many livers were condemned for liver fluke. ARSENICAL POISONING was caused by farmers' carelessness with dips.

—R. G. MARES.

SIERRA LEONE. (1956). **Report of the Veterinary Department for the year 1955.** [BIRKETT, J. D.] pp. 9. Freetown: Govt. Printing Dept. 1s. 6d. **3656**

One outbreak of ANTHRAX was controlled by vaccination of trade cattle and movement control. A new *Salmonella* serotype, *S. teko*, was identified. TRYPANOSOMIASIS of pigs occurred, but its extent and the effect of control with antrycide could not be determined. RINDERPEST has been kept under control for two years by wet lapinized virus. RABIES is common and is controlled by destruction of strays and vaccination of pet dogs. NEWCASTLE DISEASE is endemic, but the popularity of vaccination is increasing and the number of birds inoculated has doubled so that cost is becoming a limiting factor. There was a single outbreak of BOVINE CONTAGIOUS PLEURO-PNEUMONIA controlled by vaccination and standstill. WORM INFESTATION causes trouble in young stock and phenothiazine is issued free. BRUCELLOSIS occurs on the Musaia farm, but vaccination has started.

Much work is being done on livestock development and the N'Dama cattle of the country are in demand in other parts of West Africa. A scheme for introducing cattle farming into the southern parts of the country is run in collaboration with the Agricultural Department.

—R. G. MARES.

BOOK REVIEWS

BOHNING, F. (1956). *Beziehungen zwischen Menschen- und Rindertuberkulose. (Eine Studie im württembergischen Allgäu). [Relationship between human and bovine tuberculosis.]* pp. 48. Stuttgart: Georg

Thieme Verlag. DM 7.20.

3657

The purpose of this monograph is to present the epidemiology of human tuberculosis in the country district of Wangen (southern Germany), and to correlate the incidence, which is low,

compared with other parts of Germany, with the high incidence of tuberculosis in cattle. The author argues that the low incidence in man is largely due to healthier living conditions in the country, and that it is dangerous to put forward the view that bovine tuberculosis is useful in conferring immunity on the human population. The eradication of bovine tuberculosis is urged.

The statistics of human tuberculosis in Wangen form the basis of this work. Cases of active pulmonary infection are roughly equal in number to cases of non-pulmonary infection. The incidence of positive reactors among children is very high (over 50% in some schools), and particularly high in those between 10 and 14 years old, the age when children begin work in the cow-byres.—M.G.G.

GREIG, J. RUSSELL. [Hon. Research Professor in Animal Pathology, Royal (Dick) Veterinary College, Edinburgh.] (1956). **The shepherd's guide to the prevention and control of the diseases of the sheep.** pp. 116. Edinburgh: H.M. Stat. off. 2nd Edit. 4s. **3658**

This booklet was first published in 1951 [see *V.B.* 22, 522]. The new edition contains additions which include chapters on fleecce rot, stiff lamb disease, magnesium deficiency, and *Nematodirus* infestation, and many items have been re-written in the light of present knowledge. It is an accurate and up-to-date text, of value to British sheep farmers.—R.M.

VILLEMIN, M. (1956). *Le vison. Biologie—élevage—pathologie.* [The biology, breeding and diseases of the mink.] pp. 338. Paris: Vigot Frères. Fr. 1800. **3659**

A comprehensive handbook designed for veterinary surgeons, naturalists, mink breeders and those engaged in the fur trade. Three-quarters of the book cover biology, breeding,

rearing and feeding; there is a chapter on the morphology, preservation, and defects of the skins. The remainder is a simplified but full account of diseases, including infectious, nutritional and parasitic diseases, sterility, and diseases of pregnant and new-born mink. It is the first of four volumes on fur animals: others, in course of preparation, are the genetics of fur animals, the chinchilla, and the coypu.—R.M.

DAVIS, J. G. [Consultant Bacteriologist and Chemist.] (1955). **A dictionary of dairying.** pp. xxviii+1132. London: Leonard Hill Ltd., 2nd Edit. Revised and enlarged. 65s. **3660**

An encyclopaedia of dairying would, perhaps, be a more apt title for this work in view of its comprehensive nature ranging over a variety of subjects such as bacteriology, chemistry, physiology, nutrition and animal health, hygiene, public health and law, to mention a few. The greater part has been written by the author—himself a well-known dairy bacteriologist and chemist—but there are also contributions (some of them running into thousands of words) by over sixty other workers. This second edition has been enlarged by the inclusion of articles on subjects which were only briefly dealt with in its predecessor; references, which are plentiful, have been brought up to date and important changes have been noted. Technicalities have been avoided to a very large extent and simple style has been maintained throughout—the legal aspects, for instance, are condensed in just over a dozen pages of plain, everyday language followed by a list of the relevant acts, regulations and orders. There are numerous cross references and a list of dairy literature is given. The book is amply illustrated by many good photographs and line drawings and its alphabetical arrangement makes it its own index.—T.E.G.R.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BODDIE, G. F. (1956). **Diagnostic methods in veterinary medicine.** pp. xi+412. Edinburgh (and London): Oliver & Boyd. 4th Edit. 25s.

BOL', K. G. & BOL', B. K. (1954). *Základy patologickej anatomie domácich zvierat.* [Elements of veterinary pathology.] pp. 683. Bratislava: Slovenská Akadémia Vied. Kčs 139. [In Slovak.]

HOVORKA, J. (1954). *Helmintologická diagnostika. I. Laboratórna diagnostika helmintóz.* [Helminthological diagnosis. I. Labor-

atory techniques.] pp. 377. Bratislava: Slovenská Akadémia Vied. Kčs 85. [In Slovak.]

LUCK, J. M.; ALLEN, F. W. & MACKINNEY, G. [Edited by] (1956). **Annual review of biochemistry.** Vol. 25. pp. xi+794. California: Annual Reviews, Inc. \$7.50.

MUSSELMAN, M. M. (1956). **Terramycin (Oxy-tetracycline).** pp. 144. New York: Medical Encyclopedia, Inc. \$4.00. [Antibiotics Monographs No. 6.]

Veterinary Books

DIAGNOSTIC METHODS IN VETERINARY MEDICINE

by Geo. F. Boddie 4th Edition.

This fourth edition contains a substantial number of additions and alterations to the text. The object of the work remains as an attempt to present, in a concise form, a description of diagnostic methods used in veterinary medicine along with details of interpretation. **25s.**

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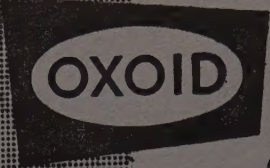
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